DOES (MORE) MONEY SEAL THE DEAL?

Reexamining the Effect of Per Capita Income and Economic Growth on Post-Conflict Risks

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ABSTRACT

As the Post-Conflict Peace has been shown to be severely fragile, several researchers have asked both what determines the risk for post-conflict peace collapse, and how it can be reduced. In their article "Post-Conflict Risks" Collier, Hoeffler and Söderbom (2008) argue that per capita income level and economic growth reduce post-conflict risks significantly and substantially. These findings have received considerable attention in both academic and in policy circles and they therefore deserve careful inspection. In this thesis I test the robustness of their results by changing from the Correlates of War to the UCDP\PRIOArmed Conflict Database. I also change to Maddison's (2006) *per capita income* dataset, to avoid missingness and thereby reduce biasness. To account for repeated events I change to the Conditional Elapsed Time model. Doing this I find that poor countries are more likely to experience a peace collapse, indicating that risk reducing efforts should be inversely proportional to the level of income. However, my findings do not support that economic growth reduces post-conflict risks.

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Table of Contents:

1 INTRODUCTION

A great war leaves the country with three armies – an army of cripples, an army of mourners, and an army of thieves.

~German Proverb

Fred C. Iklé (2005) certainly was right when he named his book "Every War Must End". Sadly, many of these wars will start again. When a civil war comes to an end, former martial enemies must continue to live and work together within the same borders. History has shown that this can be highly problematic (see: Collier *et al.* 2008; Elbadawi *et al.* 2008; Bigombe *et al.* 2000). Avoiding a new civil war outbreak is a hard task to fulfil, nevertheless of all the challenges policy makers in post-conflict societies have to meet; this is perhaps the most essential. If war breaks out again all hopes of prosperity, reducing poverty and hunger will once again be set aside. To state the obvious; sound development does not have good odds during times of war.

Unfortunately the post-conflict peace has been shown to be fragile. Bigombe *et al*. (2000) find that within the first ten years after a war has ended, 31 percent of conflicts restart. The numbers become even more pessimistic when the unit of analysis is changed from the conflict to the state. Collier, Hoeffler and Söderbom (2008: 465) find that between 1960 and 2002, the risk of peace collapse during the first decade was 40 percent. The collapse was either due to recurrence of the old conflict, or outbreak of another conflict within the state. Elbadawi and Hegre (2008: 453-454) show that an increasing portion of civil conflicts are due to recurring old rather than outbreak of new ones. Since 1993 recurrences of old conflicts have constituted more than half of all civil war onsets, and in both 2005 and 2006 all onsets were due to renewed fighting over old incompatibilities. Based on these numbers Elbadawi and Hegre (2008: 458) argue that "effective handling of post-conflict periods is arguably the most important component in international efforts to bring down the incidence of civil war".

1.1 POST-CONFLICT RISKS

In their article "Post-Conflict Risks" Collier, Hoeffler and Söderbom (2008)[1] find that there is a strong and negative relationship between *civil war recurrence,* and *per capita income* and *economic growth.* If the level of income is twice the mean, and all other characteristics are held constant, decade risk falls from 40 to 31 percent. If the economy remains stagnant throughout the decade, risk is 42.1 percent. "If, instead, the economy grows at 10 percent per year, which is fast but not without precedent, decade risk falls to 26.9 percent" (Collier et al. 2008: 469). Based on this they argue that poor countries are more likely to experience a peace collapse, and that "faster growth directly and significantly reduces risk in the year which it occurs" (Collier et al. 2008: 469). Their findings should be of interest to anyone trying to reduce the incident of post-conflict peace collapse. They both identify which post-conflict societies that are the most fragile; *the poor* ones, and provide a possible mean in order to reduce post-conflict risk; *economic growth*. Although not even the will of the entire international community can guarantee economic growth, it does indicate what kind of reforms need to be promoted.

In this thesis I test the robustness of Collier, Hoeffler and Söderbom's findings to changes in the conflict dataset. As will be discussed at length below there are a number of problems with the dataset used by Collier et al, Correlates of War (COW). I therefore change from that dataset to the Armed Conflict Database (ACD). If findings were robust such a change should not affect Collier et al's substantial findings. Doing this, however, I find that lower per capita income is associated with higher risk of civil war recurrence, *but I find no significant relationship between economic growth and post-conflict risk.* Hence, my analysis does not support that increasing economic growth will reduce post-conflict risk, -at least not in the short run. In the longer perspective it is only through economic growth that a low income country can develop to become a middle or high income country, and by this reduce post-conflict risk. However, as post-conflict risk is at a peak when war ends, before it slowly starts to decrease, the crux is normally how to get the country through the first decade. In order to reduce post-conflict risk the first decade, my analysis does not support that increasing economic growth will lead to lower risk.

[1] From here on referred to as CHS.

1.1.1 The Need For a Replication Study

The CHS article, although recently published, has already been cited by 9 other articles.[2] In addition to being discussed by other scholars it is utilized in the UN report "Post-Conflict Economic Recovery. Enabling Local Ingenuity" (2008). In accordance with the findings of CHS the UN report clearly states that post-conflict economic recovery is important because it can help reduce the risk of conflict recurrence (Ohiorhenuan and Stewart 2008: 8). Flores and Nooruddin (2009: 3) hold that "increasingly, scholars studying civil conflicts believe that the pace of postconflict economic recovery is crucial to a return to peaceful politics". This has made several researchers study which conditions favor post-conflict economic recovery (see: Collier 2009; Flores and Nooruddin 2009; Davies 2008). As the director of the Research Development Department of the World Bank group, Paul Collier is well placed to influence the thinking and decisions of the World Bank. When the president of the World Bank Robert B. Zoellick state that "only by securing development can we put down root deep enough to break the cycle of fragility and violence" (WB 2009) he is not necessarily influenced by Collier, but they are definitively on the same page. In 2007 the IMF decided to start priotitizing post-conflict countries in Africa in order to "re-energize the economy of the world's poorest continent"(BIC 2007).

Both the preceding statements and the research of Collier (2009), Davies (2008) and Flores and Nooruddin (2009) presupposes that economic growth will in fact reduce post-conflict risk. Although this is the conclusion of CHS; there are good reasons to argue that neither the relationship between economic growth and post-conflict risk, nor between per capita income and post-conflict risk have been sufficiently scrutinized to conclude that the relationships are robust. Firstly, Barbara Walter (2004) is the only one else who has conducted a similar study,[3] but instead of using GDP per capita she uses the infant mortality rate. The infant mortality rate is an often used indicator for socio-economic development (see: Esty *et al.* 1999; Goldstone 2002; Urdal 2005). In accordance with the findings of CHS she finds that a high infant mortality rate and increases in the infant mortality rate are associated with higher risk for multiple wars. Both Walter and CHS use the COW database in order to identify post-conflict societies. As I will argue

[2] Reported at ISI the 20th of November 2009.

[3] That I am aware of. Bigombe *et al* (2000) also use per capita income growth, but focus on African countries. Sambanis (2008) includes socioeconomic development, but does not focus on peace collapse, but peace establishment.

in chapter three utilizing the COW database when studying post-conflict peace episodes is problematic as we know little about how start and end dates are coded.

Secondly CHS (2008: 469) claim that "income matters: it is highly significant and the effect is large". A closer look at the CHS table[4] demonstrates that per capita income is less significant than they let us believe. Their table includes four different models, where the same method has been used; a piecewise exponential model, but with different independent variables. Both *income level* and *economic growth* are included in the four models. While per capita income growth is significant at the 5 percent level in all of the models, irrespectively of which covariates are included, per capita income level is not. Per capita income is only significant at the 5 percent level in the fourth model. In the three other models it is significant at the 10 percent level. However, when running their do-file on their data; per capita income is no longer significant at the 10 percent level in the three former models. In the fourth model per capita income continues to be significant at the 5 percent level.[5] The rest of the covariates are more or less unchanged.

Thirdly, CHS include a polity variable in each of the four models (Collier et al. 2008: 468-469). The polity variable is a 21 point scale ranging from -10 to 10, where -10 indicate a autocracy and 10 a democracy (Marshall *et al.* 2009). To avoid treating an ordinal variable as a scale variable CHS have transformed it into a dummy variable (Collier et al. 2008: 470). The dummy scores 1 if the country-year is autocratic and scores between -5 and -10 at the polity variable. If not it scores 0. This is not the conventional way of treating the polity variable. Most other researchers transform it into two dummy variables and thus include three categories: "autocracy" (-10 to -6), "anocracy" (-5 to 5) and "democracy" (6-10). When using autocracy as the reference category and introducing both the "anocracy" and "democracy" variable into the fourth model, I find that per capita income is no longer significant in any of the models. The growth variable on the other hand is significant at the 1 percent level in all four models. Based on the scarcity of alternative research, the use of COW and the fragility of the effect of *per capita income*, there should be good reasons to perform a replication study of Collier, Hoeffler and Söderboms findings regarding the effect of *per capita income* and *economic growth* on post-conflict risk.

[4] The table is available as Table A-1 in the Appendix
[5] See Table A-2 in the Appendic

1.2 THE IMPORTANCE OF ROBUSTNESS

Edward E. Leamer (1985: 308) once wrote that "a fragile inference is not worth taking seriously". It is essential that research leading up to broad policy advice is based on robust findings. If results are significantly altered by small changes in the data, basing policy decisions on these results is risky. This becomes even more important when the unit of analysis is as heterogeneous as post-conflict societies. Take as an example of this the difference between post-conflict Pakistan in 1971 and post-conflict Colombia in 1993. While the war in Pakistan lasted six months and caused 50 000 battle-related deaths the war in Colombia lasted nine and a half year and caused less than 8,500 battle-deaths.[6] It is beyond doubt that the heritage of these conflict years has left very different challenges. If the relationship between income level and economic growth, on post conflict risk is fragile, it is unlikely that these two variables will have corresponding effects on different post-conflict societies. Dissimilar strength in the effect is not, of course, by itself problematic; in fact it is to be expected. The problem appears if the effect is none-existent or worse fundamentally altered in some societies. This is most likely to happen when inferences are fragile. Basing broad policy advices on such results is not recommended. If the relationships are fragile one should attempt to identify under which circumstances and through which mechanisms the desired effect is likely to occur. To know whether it is wise to act upon the findings of CHS, then, it is absolutely necessary to know whether the results are robust.

1.3 PLAN OF THE THESIS

As there exists little theory on the relationship between the economy and post-conflict risk I start the next chapter by laying out the two main theories explaining why civil wars tend to break out in poor countries; *the opportunity theory* and *the state capacity theory.* I identify the mechanisms inherent in the two theories and discuss whether it is probable that they are operable in post conflict societies as well. I argue that apart from a few exceptions that it is. The mechanisms in the opportunity theory imply that economic growth will, although it might take some time do nothing but reduce post-conflict risk. In contrast, the mechanisms in the state capacity theory

[6] The conflict-years are taken from Gleditsch (2004) while the battle-deaths data are from Lacina and Gleditsch (2005).

imply that economic growth might increase post-conflict risk in the short run. In the long run however, it predicts a reduction in post-conflict risk.

In the third chapter I test whether CHS findings are robust to changes in the database; from COW to PRIO-Uppsala's Armed Conflict Database (ACD). As information regarding the coding criteria in COW is absent I construct eight candidate post-conflict dataset and compare these with CHS'. When running the analysis on the most similar dataset I find that the effect of *per capita income* becomes stronger, and is now significant at the 1 percent level. The effect of *economic growth* continues to be negative, but is now weak and highly insignificant. In chapter four I try to explain why the effect of economic growth differs to such an extent when changing from the COW to the ACD database. I argue that it is caused by differences in which conflicts are included and differences in how start and end dates are coded.

In chapter five I continue to use the ACD dataset, and change to what I consider to be a more valid definition of post-conflict peace. In order to better account for missingness I shift to Maddison's (2006) per capita income data. I change to a method that better accounts for repeated events; the Conditional Elapsed Time model. Doing this I find that per *capita income continues to be significant*, though only at the 10 percent level in two of the models. The effect of *economic growth continues to be highly insignificant, and is even positive in one of the models*. I argue that the lack of a significant relationship between economic growth and post-conflict risk can either be due to (1) noise in the data, making it hard to capture the effect. (2) Economic growth affecting post-conflict risk in both directions. Or (3) that there does not exist a relationship between the two. The thesis does not provide an answer to how to reduce post-conflict risk. However, hopefully it adds some knowledge to questions regarding the effect of what is considered to be a valid method in order to reduce post-conflict risk; *economic recovery*.

2 THEORY

In this chapter I discuss the two main theories attempting to explain why civil wars tend to occur in poor countries: the opportunity theory and state capability theory. I argue that the mechanisms inherent in the two theories are likely to be operable in post-conflict societies as well as pre-war societies. Thus the two theories should be able to explain the observed relationship between poverty and post-conflict risk. While the opportunity theory, associated with Collier and Hoeffler, predicts that economic growth will reduce post-conflict risk, the state capability theory, put forth by Fearon and Laitin, implies that economic growth might increase post-conflict risk in the short run. In the longer perspective economic growth should reduce post-conflict risk.

Few, if any, have made the case for understanding the connection between peace and war as well as Geoffrey Blainey. In his classic book "The Causes of War" (1988: 3) he writes that "for every thousand pages published on the causes of war there is less than one page directly on the causes of peace. And yet the causes of war and peace, logically, should dovetail into one another. A weak explanation of why Europe was at peace will lead to a weak explanation of why Europe was at war. A valid diagnosis of war will be reflected in a valid diagnosis of peace." As post-conflict societies exist in a grey zone between war and peace they should be ideal cases for testing theories. It is very possible that the mechanisms causing war and peace are stronger and more readily observable in precisely these societies. However it might just as well be the case that the mechanisms causing the first war might be different from the mechanisms causing the second war. The process of war might change a society so fundamentally that we will need different theories to understand the second or third outbreak of the war, than the first.

2.1 WHY DO CIVIL WARS BREAK OUT IN POOR COUNTRIES?

The vast majority of intrastate conflicts take place in developing countries. Sambanis argues that civil war is mainly a problem of the poor (2002: 216). Besides population size no other known variable predicts civil war outbreak as well as GDP per capita (Hegre and Sambanis 2006). The apperance of this negative relationship has made Collier argue that poor countries are at risk of being captured in a conflict trap, where history can be summed up as a vicious circle between

poverty and war. Poverty makes civil war outbreak more likely, civil war increases poverty, which again makes another civil war outbreak more likely (Collier 2007: 32-35).

Little theorizing has been done on the effect of the economy on post-conflict risk. Hence, in order to explain the observed relationship between post-conflict risk, and per capita income and economic growth, I make use of the two main theories explaining civil war occurrence in poor countries. Both Collier and Hoeffler's opportunity theory and Fearon and Laitin's state capability theory focus upon opportunities for going to war rather than motives. They justify this by claiming that there will always be groups within a society that are motivated for going to war. What is unique about societies where conflict breaks out is not the existence of motives, but rather the existence of structural opportunities enabling civil war outbreak (Collier and Hoeffler 2004: 564-565; Fearon and Laitin 2003: 76). Collier and Hoeffler focus on the existence of opportunities for financing and recruiting rebels. Unless the economic structure of the society makes it possible for the rebel organization to finance an army; there will be no civil war outbreak. The economic circumstances that generate profitable opportunities for rebel organization are rare, and expected to exist in poor rather than rich societies (Collier and Hoeffler 2004: 564). If a rebel organization is to succeed in mobilizing its own army, it must have (1) an income to finance the army, and (2) access to laborers that are willing to join the army for the payment the rebel organization is able to offer. Consequentially the potential for building an army will be better if the rebel organization's income is relatively high, and the wage they must offer soldiers is low. Both of these conditions are more likely to exist in poor rather than rich societies.

In order to exist, rebel organizations must engage in income-related activities. Collier and Hoeffler claim that looting is the most available source of revenue, and primary commodity export is the most lootable of all economic activities. One indication of this is that primary commodity exports are also the most heavily taxed activity. As looting is nothing else than illegal taxation, the same characteristics that make it easy for government to tax them, should also make it easy for rebels to loot them (Collier 2006: 9-10). As the proportion of primary commodity exports is expected to decrease with per capita income, thus rebel organization's income possibilities should be better in poor than in rich states.

In order to mobilize an army, having an income is a necessary but not sufficient condition. Whether a potential recruit wants to join the army is contingent on how much he would earn if he

joined the conventional workforce instead. When people are poor they have little to lose from joining a rebel group, and rebel organizations can therefore find relatively cheap recruits (Collier 2006: 10). This is exemplified by the desertion rate during the Russian civil war. One might expect that most soldiers would leave the army during the harsh winter; however this was not the case. Most soldiers deserted during summertime when they had crops to attend to, and the opportunity cost of fighting necessarily increased (Figes 1990: 182; Collier and Hoeffler 2004: 569).

2.1.1 The State Capacity Framework

Fearon, among others, has criticized Collier and Hoeffler's framework. Fearon (2008: 297) argues that although poor people have less to lose from joining a rebel organization, they also have less to win. Rebel organizations in rich countries can attract potential soldiers with higher benefits if they win the war.[7] According to Fearon these two mechanisms cancel each other out; and hence they cannot explain why civil wars are concentrated in poor countries (Fearon 2008: 299). Nevertheless, he agrees with Collier and Hoeffler on one point; it should be easier for a rebel group to obtain an adequate income to finance the army in a low-income country. While Collier and Hoeffler argue that this is caused by the lootability of primary commodities, Fearon maintain that it is due to the immobile capital of small-holding peasant economies. "The standard "appropriative technology" of insurgency consists of visits to households or businesses in order to collect revolutionary taxes" (Fearon 2008: 299). "In a richer economy with more income from human capital, individuals are more able to move in response to local extortion threats and the danger of living in a conflict zone, making the effective tax rate for rebels lower. By contrast farmers' income comes from immovable capital" (Fearon 2008: 314).

Fearon and Laitin (2003: 79) claim that the main factors determining civil war outbreak are conditions that favour insurgency. "Although many civil wars after 1945 have been "ethnic" or "nationalists", as these terms are often understood, even more have been fought as insurgencies. Insurgency is a technology of military conflict characterized by small, lightly armed bands practicing guerrilla warfare from rural base areas. As a form of warfare insurgency can be harnessed to diverse political agendas, motivations and grievances". Insurgencies are weak

[7] The same argument can be found in Kocher (2004).

relative to government forces, at least at the beginning of the operations. Therefore if the government knew their identity and where they were hiding, they would fairly easily be destroyed or captured. As a result no war would break out (Fearon and Laitin 2003: 79-80). Based on this Fearon and Laitin argue that the main condition explaining civil war outbreak is whether insurgents can hide efficiently from government forces. How efficient the hiding is will be determined by two conditions; (1) the access to good hiding places, and (2) the ability of the government to obtain good intelligence and localize the insurgents. These conditions are both expected to correlate with GDP per capita.

2.1.2 Hide And Seek

Hiding from government forces should be easier in rural settings, poorly served by roads, at large distance from the centres of state power (Fearon and Laitin 2003: 80). As rich countries are expected to be less rural and better served by roads; it should also be harder to find a good hiding place than in developing countries. Having a good hiding place however, is of little use if the government has the necessary resources to localize the rebels wherever they are hiding. In order to expose the identity and hiding place of the insurgents, the state depends on good intelligence and a professional military. Efficient counterinsurgency is an exceptionally difficult political and military task, but essential if the government is to succeed in capturing rebels before war breaks out. The crux is to acquire adequate intelligence to distinguish between active rebels and non-combatants, as well as to prevent military units from killing indiscriminately thus increasing support for rebels, and prevent corruption in which military units loot and pillage from helpless populations (Fearon and Laitin 2003: 80). Fearon and Laitin claim that the accomplishment of these challenges depends on the state's overall police, military and administrative capabilities. State capabilities are expected to correlate with per capita income (Fearon 2008: 314).

2.1.3 The Mechanisms at Play

Based on the two theories three conditions vital for civil war risk can be identified; (a) rebel organizations must have income opportunities, (b), they must be able to recruit fighters (c) and they must be able to efficiently escape from the reach of the state, i.e. hide. The opportunity theory only focuses on condition number one and two. Collier and Hoeffler claim that these will be affected by the income level through two mechanisms; the lootability of primary commodities

and the potential rebel's opportunity costs. Fearon and Laitin on the other hand maintain that all three conditions are decisive for civil war risk. In their theory however, the *ability to recruit fighters* will not change with the income level, because the two mechanisms they identify; opportunity costs and the size of the possible award, cancel each other out. In section 2.3.1 I argue that it takes longer for economic growth to result in new income opportunities, than it takes potential rebels to realize that there has been an increase in the possible award of winning a war. Thus in the short run *the ability to recruit fighters* will be affected by changes in the income level. Accordingly I include the two mechanisms in the following discussion. Five mechanisms can therefore be identified in the Fearon and Laitin model. The immobility of capital in small-holding economies, potential rebel's opportunity costs, the size of the possible award, the supply of good hiding places and the ability of the state to seek and capture the insurgents. As one of the mechanisms "*opportunity costs"* appears in both theories the two theories can be summarized through six mechanisms in Table 2-1.

Table 2-1 *Theoris on Civil War*

Condition	**The opportunity theory**	**The state capacity theory**	
(a)	(1) Lootability of primary commodities	(2) Immobility of capital in small holding peasant economies.	
(b)	(3) Opportunity costs	(3) Opportunity costs	(4) Size of the possible award
(c)		(5) Hiding places	(6) Seeking abilities of the state

2.2 HOW ARE POST-CONFLICT SOCIETIES DIFFERENT?

Post-conflict societies differ from other societies. First of all they have just experienced a conflict. Second of all, as Collier *et al*. (2003: 32) point out; civil war is development in reverse. Collier and Hoeffler (2004: 133) find that the adverse growth effects of a conflict during the conflict is equivalent to a loss of 115 percent of initial GDP of one country. Nevertheless Collier *et al*. (2003: 14-15) argue that the main economic losses comes from the damage the diverted resources do when they are used for violence. The most obvious cause arises from the direct destruction of infrastructure. During war rebel forces target physical infrastructure as part of their strategy. The main targets are the enemy's communication and support lines, such as

telecommunication, airports, ports, roads and bridges. Although no quantitative study has examined the extent and costs of the direct destruction of the infrastructure, the severity of the damage is supported by case studies. e.g. Brück (2001) on Mozambique. Both the consequences of the war and the fact that civil wars tend to break out in poor countries indicates that post-conflict societies can normally be characterized by a weak economy and a weak state.

2.2.1 Economy and Post-Conflict Societies

There are few good reasons to expect that the six mechanisms inherent in the two theories should not appear in post-conflict societies. Rebel organization should still be able to finance themselves either through looting of primary commodities or house to house visits. Of course; it presupposes that there is money to collect, or primary commodities to loot. Civil wars cause damage both to private assets and business. However; the society is seldom or never left completely damaged, so there will still be people to rob, or commodities to loot. An ended civil war also invariably leaves plenty of weapons around, and consequentially rebel organization might not need to invest in new weapons. If this is the case, they will only need the necessary income to feed and pay soldiers. Although the war might make it harder to get hold of the necessary income, it should be easier to extract the necessary income in a post-conflict society dependent on primary commodity export, or consisting of a small-holding peasant economy than one based on human capital. Hence mechanism (1) *the lootability of primary commodities* and/or (2) *the immobility of capital in small holding peasant economies*, should be able important for understanding both civil war outbreak and recurrence

The war might change the preferences of potential soldiers, and thereby reduce the effect of mechanism (3) *opportunity costs and* (4) *the size of the possible award*, explaining soldier's recruitment. Walter (2004) and Hartzell *et al*. (2001) find that long-lasting civil wars are followed by stable post-conflict peace periods. Doyle and Sambanis (2000: 785) argue that this might be due to lasting wars offering a chance for the parties to learn and reflect over the benefits of peace and thereby control war-related hostility. If this is the case, one might see a change in preferences of potential soldiers in post-conflict societies; making them more war reluctant. However, if longs wars make potential soldiers more war-reluctant, intense wars should also be followed by stable peace periods. The findings of Hartzell *et al*. (2001: 202) indicate the opposite; the higher the number of battle-deaths; the more likely is it that war will resume. Thus there are no good

reasons to assume that mechanism 3 and 4 should be mitigated in post-conflict societies. The importance of mechanism (5) *hide* and (6) *seek* depend on whether potential insurgents need to hide from government forces. If the war ends in a negotiation between two equally strong sides, hiding from government forces in order to avoid combat while strengthening the organization, might not be necessary. Accordingly the importance of the hide and seek mechanisms will diminish, or completely disappear. This will only be the case when we are calculating the risk for the same conflict to reoccur in post-conflict societies where the two sides continue to be more or less equally strong. In every other case the mechanisms should continue to matter.

2.3 ECONOMIC GROWTH

The aim of Collier, Hoeffler and Söderbom (CHS)'s study is both to identify which post-conflict societies are likely to be most fragile, and identify possible risk reducing methods. While per capita income level is merely used to identify which post-conflict societies are most at risk, economic growth can also be used to lower post-conflict risk. However, if stimulating economic growth leads to a reduction in post-conflict risk it presupposes that economic growth affects post conflict risk either directly, or (more likely) indirectly. The observed correlation between economic growth and civil war risk might just as well be caused by either (1) spuriousness ; a third variable, for example the strength of the state, affecting both economic growth and post-conflict risk or (2) endogeneity; the relationship being adverse, that the absence of post-conflict risk increases economic growth. Countries with lower risk are more likely to attract foreign investment or reduce capital flight. If this is the case stimulating economic growth will not affect post-conflict risk. In order to avoid the problem of endogeneity CHS have given economic growth a one year lag. The rationale for doing so is that post-conflict risk this year does not affect economic growth the previous year. Nevertheless as they do not control for any of the most likely candidates causing a spurious relationship; the *strength of the state* and *social capital,*[8] one cannot rule out that the observed relationship is spurious.

There are good reasons for assuming that the observed relationship is caused at least partially by economic growth directly or indirectly affecting post-conflict risk. Firstly, given the strength and

[8] Data on the strength of the state and social capability is severely limited in post-conflict societies. Therefore including such variables in the former analysis is not possible.

significance of the relationship,[9] it is less likely that it is caused merely by spuriousity. Secondly, a large part of economic growth, at least during the first years of the post-conflict peace period, originates from IMF loans and aid. This part of the economic growth cannot be subscribed to either changes in *state capacity* or changes in *social capital*. Hence, at least a considerable part of the observed relationship between economic growth and post-conflict risk should be due to a direct or indirect effect of economic growth on post-conflict peace risk.

2.3.1 Short Run vs. Long Run Effects

Few scholars have attempted to explain why economic growth tends to reduce civil war risk. Collier and Hoeffler (2004: 569) argue that economic growth is a proxy for new income opportunities, making guerrilla warfare less attractive, and can be equated with mechanism number 3; *opportunity costs* in section 1.1.3. However, as Collier (2009: 102) points out, economic growth, reducing post-conflicts risk is likely to work through a number of other channels as well.[10] There are few good reasons to assume that economic growth in the long run is less likely to affect post-conflict risk through the other five mechanisms identified in section 1.1.3. In order for economic growth to reduce post-conflict risk through new income possibilities economic growth must in fact lead to new and/or better jobs. In the long run economic growth is also likely to increase the state's military, police and administrative capabilities, improve communication systems such as roads, and modernize the economic system. The argument is partly strengthened by the fact that aid programs in post-conflict societies normally focus on repairing or rebuilding the destroyed infrastructure, such as roads, waterways, energy and communication networks, as well as restoring the provision of basic public services (Demekas *et al.* 2002: 3).

Unfortunately, creating new jobs, building roads, strengthening state institutions and modernizing the economy takes time. Of these four the two former are likely to take the lesser time. The two mechanisms in the opportunity theory are likely to be stimulated by economic growth, but it probably takes much shorter time before economic growth generates new income possibilities than it takes for it to modernize the economy. While CHS (2008: 469) claim that "faster growth directly and significantly reduces risk in the year which it occurs", Collier has also argued that

[9] See section 1.1.1
[10] He does not suggest which channels this might be.

"only by the end of the post-conflict decade does even economic growth cumulate to a substantial reduction in post-conflict risk" (Collier 2009: 103).

The implications of Collier and Hoeffler's theory is that although it might take some time, economic growth will in the end reduce post-conflict risk. The implication of Fearon and Laitin's theory on the other hand differs quite a bit in the short run. Within a shorter time horizon economic growth might just as well increase post-conflict risk. Imagine that you take a typical post-conflict country with a weak state and weak economy and (somewhat magically) turn economic growth to 10 percent. According to CHS this will reduce post-conflict decade risk to 26.9 percent. However the only immediate change from economic growth is the amount of money available in the society, the rest takes time. The amount of wealth available in the society affects one of the mechanisms directly, the size of the possible award. As Fearon (2008: 295) points out increasing the amount of money in the society should make it easier for rebel organization to attract potential soldiers because of greater benefits if they win the war. This of course presupposes that potential rebels are informed about the increase in the possible award. If the leaders of a rebel organization are to have any chance of starting a civil war they must be strategically oriented, i.e. they must engage in some strategic behaviour. Strategically oriented leaders are likely to seek information and thus be better informed than the average citizen. Such information they will of course disseminate, and this reduces the information lag.

Given the five mechanisms in Fearon and Laitin's model it is likely that economic growth firstly (1) stimulates the incentives for going to war and (2) secondly it produces new income possibilities. Then in the long run it (3) increases the mobility of capital, (4) reduces the supply of good hiding places and (5) increases the counter insurgency capacity of the state. If this is correct we should see an increase in post-conflict risk in the period between mechanism number 1 and 2. Then when both mechanism number 1 and 2 are in operation, they should cancel each other out, making post-conflict risk independent of economic growth. In the longer run however when mechanism 3, 4 and 5 are operable, economic growth should, as the theory of Collier and Hoeffler implies, reduce post-conflict risk. Nevertheless if my argument and Fearon and Laitin's theory are correct economic growth will not reduce post-conflict risk in the shorter run. This is serious as post-conflict risk falls with time (Collier and Hoeffler 2004: 576), thus reducing risk in the short run should be priority number one. An alternative to focus on economic growth is to

focus directly on risk reducing factors such as generating new income possibilities and strengthening the state's overall capabilities.

2.4 CONCLUSION

As there exists little theory on the relationship between the economy and post-conflict risk I started this chapter by laying out the two main theories explaining why civil wars tend to occur in poor countries; *the opportunity theory* and *state capability theory.* I argued that apart from some exceptions regarding the insurgency group's need to hide, the mechanisms in the two theories are expected to be operable in post-conflict societies as well as pre-war societies. According to both of the theories post-conflict risk should be higher in low than in middle or high income economies. The implications of the two theories differ when it comes to the effect of economic growth in the short run. The mechanisms in the opportunity theory implies that economic growth will, although it might take some time, exclusively reduce post-conflict risk. The implications of the state capability theory however, are that economic growth might increase post-conflict risk in the short run. In the long run however, economic growth should reduce post-conflict risk. This stands in contrast to CHS' findings; while the negative effect of *per capita income* seems to be somewhat fragile,[11] the effect of economic growth is strong and significant at the 5 percent level in all of the models. In the next chapter I test whether CHS findings depend on the choice of database. In order to do so I change from the COW to the ACD database, and try to do everything else as similar as possible.

[11] See section 1.1.1

3 CHANGING DATASET

"You live and die by your coding criteria"
J. David Singer

The goal of this chapter is to test the robustness of Collier, Hoeffler and Söderbom's findings to changes in the conflict database. Such a change should not, if their findings are robust, alter their substantive results. I start the chapter by examining how the chosen battle-death thresholds used to operationalize civil war, affects the understanding of post-conflict peace. I then focus on the lack of clear coding criteria for how civil war is defined in the updated COW database. As this is the database used by Collier, Hoeffler and Söderbom (CHS) we are left without the necessary knowledge of how their unit of analysis is defined. By using the PRIO - Uppsala Armed Conflict Database I construct a dataset that is as similar to CHS as possible. When running the CHS's statistical model on this dataset I find that the effect of *per capita income* is negative and significant, while the effect of *economic growth* is highly insignificant.

3.1 DEFINING POST-CONFLICT PEACE

Peace is often defined through what it is not; war. Post-conflict peace is defined both through the absence of war, and by the war it follows. Consequentially, in order to identify post-conflict peace episodes, one must start by identifying the civil conflicts; when they start and when they end. Several scholars and research projects have offered definitions of civil war (see: Gleditsch *et al.* 2002; Small and Singer 1982; Fearon and Laitin 2003; Sambanis 2004). One of the main differences between these definitions is which battle-death threshold has been used. The battle-death threshold is essential for deciding which conflicts are severe enough to be coded as civil wars, and for coding start and end dates. We can differ between three main threshold criteria; (1) a strict annual, (2) a lenient annual and (3) a cumulative criterion. When studying post-conflict risk it is necessary that the unit being analyzed is in fact a post-conflict peace. Or to put it differently; as in any study measurement must be valid. Measurement will be valid "when the scores, derived from a given indicator can meaningfully be interpreted in terms of the systematized concept that the indicators seeks to operationalize" (Adcock and Collier 2001: 531).

In the following I demonstrate how battle-death threshold affects the measurement validity of post-conflict peace.

3.1.1 The strict Annual Criterion

COW was the first conflict database available. It was initiated by Melvin Small and J. David Singer, and the most recent update was carried out by Kristian Gleditsch in 2004. Small and Singer (1982: 213-215) defined civil war as military action that causes at least 1,000 battle-deaths per year. For resistance to be considered as efficient the stronger side should suffer at least 5 percent of the causalities of the weaker side. Using a strict 1,000 annual criterion has two obvious advantages: Firstly, coding start and end dates will be fairly simple. The war starts the first year it reaches more than 1,000 battle-deaths and ends as soon as it decreases to less than 1000 battle-deaths per year. Secondly it ensures some homogeneity in the database. A conflict that causes 50 battle-deaths will be quite different from one that causes 2,000. Hence it is plausible that causes and consequences differ; accordingly it might be inappropriate to include them in the same analysis.

While utilizing as strict a definition as the one offered by COW may be unproblematic in studies where the unit of analysis is the actual war, it is far more problematic in a study where the unit of analysis is post-conflict peace episodes. As the 1,000 annual battle-deaths threshold implies that a war is coded as ended the first year annual battle-death decreases to less than 1,000, a warlike situation that causes between 0 and 999 battle-deaths a year will be coded as a post-conflict peace. To illustrate consider the war between the Columbian government and Fuerzas Armadas Revolucionarias de Colombia (FARC). According to COW the war ended in 1993. At that point there were no peace agreement within reach and hundreds were killed in continuing battles. During the post-conflict peace period which lasted for four years 1,684 battle-deaths were reported.[12] Few, if any would agree that this was in fact a post-conflict peace episode. By utilizing a strict annual criterion in studies of post-conflict societies the analysis will arguably suffer from low measurement validity.

[12] The COW project does not provide annual point estimates of the battle-deaths, and I therefore had to use the numbers estimated by Uppsala/Prio. 1,684 battle-deaths is according to the lowest battle-death estimate offered by Lacina and Gleditsch (2005). Data are available from: http://www.prio.no/CSCW/Datasets/Armed-Conflict/Battle-Deaths/

3.1.2 The Lenient Annual Criterion

An alternative to the COW database is the PRIO – Uppsala Armed Conflict Database (ACD). In the ACD database armed conflict is defined as "a contested incompatibility that concerns government or territory or both where the use of armed force between two parties results in at least 25 battle-related deaths. Of these two parties, at least one is the government of a state" (Gleditsch et al. 2002: 618-619). By using a lenient annual criterion we avoid coding a war-like situation with somewhere between 25 and 999 battle-deaths a year as a post-conflict peace. This clearly improves measurement validity.

A second advantage is as Strand (2006: 60) points out that lowering the threshold for inclusion will yield more conflicts and thus more flexibility for quantitative analysis. However by lowering the threshold too much we risk ending up concentrating on a clutter of small incidents unlikely to have much impact on political or economic life. Strand argues that the 25 battle-deaths threshold adopted in the ACD database should be high enough for the violence to represent a politically significant event, although the precise local and international impact may vary. I argue that there is a drawback from using the annual 25 battle-deaths threshold when defining post-conflict peace episodes. Take for example the conflict between the Mexican government and the Revolutionary People's Army (EPR) in 1996. The conflict lasted three months and caused 25 battle-related deaths. The challenges the Mexican government had to meet in the wake of this conflict are clearly very different from the challenges left after a conflict that caused thousands of battle-deaths. While a strict annual criterion makes it hard to justify that the unit of analysis is an actual peace, a lenient can make it hard to justify that it is in fact a post-conflict society. Both are problematic for measurement validity.

3.1.3 A Cumulative Criterion

An alternative in order to avoid both of the problems discussed in section 3.1.1 and 3.1.2 is to use a cumulative criterion. To be included in Fearon and Laitin's (2003) dataset; "the conflict must have killed at least 1,000 over its course with a yearly average of at least 100". The start year is set till the first year in which 100 were killed or in which a violent event that was followed by a sequence of action that came to satisfy the two criteria above. War ends are coded by observation of victory, wholesale demobilization, truce or peace agreement followed by at least two years of

peace (Fearon and Laitin 2003: 76). By using their definition of war, less severe post-conflict episodes as the one in Mexico will not be included in the dataset, and there will be no peace episode including hundreds of battle-deaths. A problem with Fearon and Laitin's database is that they do not offer specific start and end dates; they just report the year. This will make the estimates less precise (see: Gates and Strand 2004: 13), and the problem will be more severe if post-conflict peace episodes are shorter. Take as an example of this the conflicts in Niger: According to the ACD Database the first conflict started the 1st of October 1992 and ended the 31st of December 1992. The second conflict started the 16th of May 1994 and ended the 9th of October 1994.[13] If we did not have the exact dates, the post-conflict peace episode between would have been estimated to two years. When using the exact dates we can see that it only lasted 501 days, which is 31 percent less than the first estimate. One alternative is as I will do in chapter 5 is to apply the cumulative criterion to the ACD database[14]. Thus for a conflict to be included it must have claimed at least 25 battle-related deaths per year and an accumulated total of at least 1,000.

3.2 THE SECRET LIFE OF COW(S)

Both Sambanis (2004: 817) and Gleditsch (2004: 234) point out that it is not clear whether the 1,000 battle-deaths threshold of COW continues to be an annual, or if it has become a cumulative criterion. Sambanis (2004: 817) claims that COW made use of an annual criterion in the beginning, but that it was later replaced by a cumulative one. However, he doubts that it has been corrected throughout the entire dataset. If Sambanis is correct we are left without the necessary knowledge of how a war's start and end dates are coded. While an annual criterion by itself provide clear coding rules for start and end dates, a cumulative criterion does not. Take as an example of this a war which during the first three years accumulates to more than 1,000 battle-deaths. The fourth year the conflict causes 1 battle-death, the fifth year 102 battle-deaths, the sixth year 3 battle-deaths and the seventh year there are no battle-deaths at all. Given a cumulative criterion it is not clear when this war stops. In order to code start and end dates when using a cumulative criterion, additional coding rules are needed. As Sambanis (2004: 817)

[13] Conflict dates are taken from the ACD database.
[14] The start date is set to the date when a given episode of conflict activity reaches 25 battle-related deaths during one calendar year. A conflict is coded as ended if a conflict year is followed by at least one year of inactivity. The date is then set to the date the conflict stopped (Harbom *et al.* 2009: 8-9).

emphasizes these have not been provided by COW.[15] Since the COW project neither provides annual point estimates of the battle-deaths or a description of its sources for individual observations (Gleditsch 2004: 241) it is not possible to deduce which coding rules have been used by looking at the dataset. Unlike Sambanis Gleditsch (2004: 241) claims that COW continues to use a strict annual criterion; "intra state wars must have at least 1,000 battle deaths per year". Nevertheless, he claims that "it appears as if the data in many cases have been coded based on whether they involve more than 1,000 battle deaths over the duration of the entire conflict". If the strict annual criterion is used in large part of the CHS dataset, as was argued in section 3.1.1, their analysis suffers from low measurement validity.

While measurement validity pertains to whether the researchers successfully capture the phenomenon they claim to be studying, reliability concerns the consistency or repeatability of the findings. If findings remain the same when replicated, they are regarded as reliable. As both Sambanis and Gleditsch point out; it is unlikely that the same coding criterion have been used throughout the various COW dataset updates. This of course makes it hard for other scholars to replicate the data of any study that uses COW data, and get the same results. Based on this it should be clear that the CHS study by utilizing the updated COW database suffers from low reliability. In addition to this, based on which of the two scholars are mostly correct, the CHS study suffers from either a lack of knowledge of how start and end dates are coded or an invalid definition of post-conflict peace. This by itself should be sufficient reason to change to the ACD database and perform a replication study of the CHS results.

3.3 CONSTRUCTING A SIMILAR DATASET

There exist several methods for testing robustness. One way is to run the analysis on different datasets. When the unit of analysis in both datasets is an indicator of the same phenomena, effects should, if they are robust, remain substantially the same. Not knowing how the CHS dataset is put together I have had to make several "guesstimates" in order to construct a similar post-conflict dataset. Based on the preceding discussion in section 3.2 I develop four criteria that are most likely to have been used in the COW database. Criteria one and two are based on Gleditsch.

[15] According to Kristian S. Gleditsch these questions will hopefully be answered in Sarkees and Wayman (2010). Personal communication with Gleditsch 30.04.2009.

Criterion number two is developed to avoid the problem of dips in battle-deaths, e.g. from 1,000 to 800 and back to 1,000, to be coded as the end of a conflict. Criteria three and four are based on Sambanis. If the cumulative criterion has been used we do not know how start and end dates are set. I have therefore developed a lenient; number three and a strict; number four, cumulative criterion.

Criterion number 1: The 1,000 battle-death threshold is an annual criterion. The conflict starts the first year with more than 1,000 battle-deaths and ends as soon as there are less than 1,000 battle-deaths during one year.

Criterion number 2: The 1,000 battle-deaths is still an annual criterion. The war starts the first year with more than 1,000 battle-deaths, but in order to end there must be at least two subsequent years with less than 1,000 battle-deaths.

Criterion number 3: The 1,000 battle-death criterion is a cumulative criterion. There must be 1,000 battle-deaths during subsequent active conflict years. A conflict year will be regarded as active if it includes more than 100 battle-deaths.

Criterion number 4: The 1,000 battle death threshold is a cumulative, but stricter that number 3. There must be 1,000 battle-deaths during subsequent active conflict years. A conflict year will be regarded as active if it includes more than 500 battle-deaths.

Unfortunately ACD only provides annual point estimates of the battle-deaths for the period between 2002 and 2007.[16] They do however divide the conflict years into minor armed conflicts and wars. A minor armed conflict year implies between 25 and 999 battle-related deaths during one year, while a war implies at least 1,000 during the year (Harbom *et al.* 2009: 7). This gives sufficient information for constructing the dataset based on criterion number 1 or 2. When constructing the dataset based on criterion number 3 however, I make use of the Lacina and Gleditsch (2005) battle-deaths dataset. The Lacina and Gleditsch dataset provides annual point estimates for the conflict years in ACD from 1960 to 2005. As Lacina and Gleditsch make clear; counting battle-deaths is a highly complex task. The nature of war makes it very hard to reconstruct the course of events. Consequentially it is unlikely that two research groups will get

[16] Data are available from: http://www.pcr.uu.se/research/UCDP/data_and_publications/datasets.htm

the very same results when counting the number of battle-deaths. As this is a general reliability problem, relevant for any conflict database it makes robustness checks even more important.

In order to establish how serious this problem is I compare the ACD, and Lacina and Gleditsch battle-deaths estimates for the four concurrent years: 2002-2005. I find that the *highest, best* and *lowest* estimates correlate by 0.73, 0.8 and 0.74, respectively. When running a regression analysis I find that they are significant at the 0 percent level. This shows that the option is not perfect, but it is definitely the best (and only) one available.

3.3.1 What we Know

Fortunately other information regarding CHS' dataset is not missing. Firstly, CHS focus on the state and not on the conflict. A civil war will last as long as there is an ongoing war within the state. The post-conflict peace episode will be counted as collapsed if a conflict breaks out within the borders of the state, *independently of whether the conflict is new or old*. Secondly, CHS have excluded all units of observations which lack GDP per capita data. Although GDP per capita data are available for three of their post-conflict years in Iraq, none are included. This is probably because there are no estimates for the year peace collapsed. Post-conflict episodes generated by colonial wars are also excluded. Excluding colonial wars in civil conflict studies is quite common; however it has been severely criticized by Collier and Hoeffler (1998: 568) and Fearon and Laitin (2003: 76). Fearon and Laitin argue that although it might seem reasonable to drop colonial wars from the list, it implies that the Russian-Chechen wars should be excluded at the (potential) moment when the Chechen people achieve their own state. Accordingly; whether or not it is a civil war will be based on the outcome, not on characteristics of the conflict. Clearly this is very problematic. Nevertheless, including colonial war will be a bit more complicated when studying post-conflict societies. A successful anti-colonial war implies that there is a fundamental change in the boundaries of the state. As a consequence there will be two possible states to study as the post-conflict society. One possible solution is to focus on the former colony; as this is where the war took place, and the one that inherits the typical post-conflict characteristics.

Lastly it warrants discussion that CHS treat the post-conflict peace as never-ending. As long as peace does not collapse due to a new civil war outbreak, it will not be excluded from the dataset. One might argue that a post-conflict peace at some point ceases to exist and becomes simply a

"normal" peace. One example of this is the United States. Few would argue that the United States as a consequence of the American civil war (1861-1865) is still a post-conflict society. By treating the post-conflict peace as never ending one risk giving too much weight to countries where the post-conflict risk factors has in fact ceased to exist.

I apply the three criteria to the ACD database and construct post-conflict datasets intending to be as similar to CHS' as possible: The focus is on the state and not on the conflict,[17] post-conflict peace episodes with missing GDP data are excluded, no colonial wars are included and given that no war breaks out the post-conflict peace is treated as never-ending.

3.3.2 Comparing the Candidate Datasets

Lacina and Gleditsch (2005) provide three estimates for battle-deaths; the highest, best and lowest.[18] By applying all three on the third and fourth criterion I end up with eight candidate post-conflict datasets. Notice that although criteria 1 and 2, and 3 and 4 are quite different, when comparing the datasets with CHS, results are quite similar. The first column in Table 3-1 gives the number of countries included in each of the datasets. There are 45 countries included in CHS' dataset, and the number of countries included in the candidate datasets goes from 40 to 51. The second column gives the portion of countries that are the same in CHS and the candidate dataset. The number is highest when using criterion 4 with the *high* estimate. Nevertheless, the results are very close in all of the other datasets; approximately three fourth of the countries are the same as in CHS. The third column gives the proportion of country years that are the same in CHS and the candidate dataset. None of the datasets scores above 50 percent, indicating that the differences between CHS and all of the candidate datasets are substantial. Criterion 4 with the *best* estimate gets the highest score (49.45), but is followed closely by criterion 4 *high* (49.04).

The share of identical country years can be somewhat misleading. Imagine two datasets with almost identical country years: In the first dataset post-conflict peace episodes are (unlike in the second dataset), constantly erupted by short incidents of civil war episodes. Despite these eruptions the share of identical country years can be very high. Nevertheless, the longitude of the

[17] Notice that although the focus is on the state and not the conflict, in criterion 3 and 4 the same conflict must accumulate to 1,000 battle-deaths during subsequent active conflict years.
[18] There were 34, 81 and 34 missing values for the lowest, best and highest estimate. I have not excluded the missing values, but replaced it with 25 and 500. For a more detailed description see the appendix page 92-93

post-conflict peace episodes will be very different. In order to control for these I report the number of peace collapses in the fourth column. This is 33 in CHS, and criterion 4 *high* comes closest with 28 post-conflict episodes. Criterion 4 *best* has 23. As this is decisive for results I chose to use criterion 4 with the *highest* battle-deaths data when running the analysis.

Table 3-1 *Comparing the Candidate Datasets*

	Number of countries	*Share of countries that are the same as in this dataset and CHS**	*Share of country-year that are the same as in this dataset and CHS***	*Number of peace collapses*
CHS	45			33
Criterion1	41	75.51 %	47.84 %	26
Criterion 2	40	73.47 %	47.51 %	20
Criterion3 *(low)*	43	72.55 %	47.13 %	19
Criterion 3 *(best)*	50	69.64 %	46.00 %	20
Criterion 3 *(high)*	51	71.43 %	45.77 %	26
Criterion 4 *(low)*	44	74.51 %	48.79 %	20
Criterion 4 *(best)*	48	75.47 %	49.45 %	23
Criterion 4 *(high)*	50	75.93 %	49.04 %	28

In the table 8 different post-conflict datasets, based on the four criteria are compared to CHS' dataset. * Are calculated as $\frac{\text{number of countries that appear in both datasets}}{\text{number of countries in CHS and candidate dataset}}$ **is calculated likewise, but with country-years instead of years.

3.3.3 The Independent Variables

CHS include 17 independent variables in their analysis.[19] These can be classified into 9 groups; (1) economy, (2) economic freedom, (3) regime type, (4) diasporas, (5) ethnicity, (6) time, (7) UN peacekeeping operations (8) regional autonomy elections and (9) elections. I have been able to collect the variables in the six first groups. The sixth variable time is a dummy which tells whether or not the post-conflict peace has lasted more or less than 4 years, and is part of their

[19] In order to deal with missingness they use the Modified Zero-Order Regression Method, and therefore include 6 missing dummies as well. For a description of the method see section 5.4.

method; piecewise exponential model.[20] I have not been able to obtain CHS's UN peacekeeping operation data,[21] instead I used the data collected by Hegre, Heir and Nygård (2009).[22] I was not able to locate the variables in the two latter groups, nor did I find any substitute for these. When I exclude these variables a few changes occur; [23] in model 4 *per capita income* shifts from being significant at the 5 percent level to only be significant at the 10 percent level. The dummy "*No UN peacekeeping operations*" goes from being significant at the 5 percent level to being significant at the 10 percent level in model 1, 2 and 3. The "*political regime type"* variable goes from being significant at 10 percent level to being significant at the 5 percent level in all models. This is expected as *political regime type* and *elections* partially measure the same phenomena. Apart from this changes remain by and large the same.

3.4 EFFECTS OF CHANGING THE DATASET

Model 1 and 3 in Table 3-2 show the results when using my ACD post-conflict dataset, and model 2 and 4 shows the results with the CHS dataset. A piecewise exponential model is used in all models. As the table shows per capita income is not significant in CHS' first model (column 2), but is significant at the 10 percent level when economic freedom is included (column 4). The effect of per capita income is stronger in both of the ACD models, and it is significant at the 1 percent level. This supports the existence of a relationship between per capita income and post-conflict risk, and indicates that poor countries are more at risk of experiencing a peace collapse. A negative relationship between per capita income and post-conflict risk correspond to the third component of the conflict trap model: (1) poor countries are more at risk of experiencing civil war outbreak; (2) civil war increases poverty and (3) poor countries are more likely to experience a new civil war outbreak. Consequentially there is a reverse relationship between the need for risk reducing efforts and per capita income.

[20] A piecewise exponential model is a parametric model, assuming that the baseline hazard rate is flat within intervals of time (Blossfeld *et al.* 2007: 116). The intervals here are four years and less, or more than four years. To differentiate between the intervals a dummy *4+* is added to the analysis.
[21] According to CHS the UN data can be made available upon request. However I have not succeeded in getting hold of them.
[22] While CHS use data on UN expenditure, the Hegre, Heir and Nygård dataset contains information on UN appropriations.
[23] For results se table A-4 in the appendix.

Table 3-2 *Changing From COW to the Armed Conflict Database*

	(ACD)	*(CHS)*	*(ACD)*	*(CHS)*
Per Capita Income	-0.627**	-0.340	-0.803**	-0.511
	(-2.81)	(-1.48)	(-3.08)	(-1.91)
Economic Growth	-0.380	-3.246*	-0.0623	-3.640*
	(-0.18)	(-2.08)	(-0.03)	(-2.08)
Political regime	0.408	1.349**	0.300	1.534**
	(0.95)	(2.72)	(0.69)	(3.06)
Regime Missing	-0.305	1.737**	-0.375	1.723**
	(-0.35)	(2.73)	(-0.42)	(2.68)
Diaspora	0.0310	-0.382**	0.0533	-0.264*
	(0.22)	(-3.17)	(0.38)	(-2.12)
Diaspora Missing	0.0929	3.653*	-0.007	2.587
	(0.07)	(2.53)	(-0.01)	(1.78)
Ethnic Diversity	1.076	-0.855	0.690	-1.342
	(1.13)	(-1.00)	(0.71)	(-1.58)
Ethnic Missing		-13.80		-15.05
		(-0.01)		(-0.01)
UN Expenditure	0.212	-0.357*	0.137	-0.441*
	(0.60)	(-2.02)	(0.41)	(-2.43)
UN missing	2.709	-3.074	2.358	-4.372*
	(1.37)	(-1.64)	(1.26)	(-2.27)
No UN PKO	1.050	-3.142	0.630	-4.386*
	(0.65)	(-1.78)	(0.41)	(-2.35)
Economic Freedom			0.101	-0.323
			(0.32)	(-1.17)
EcoFree Missing			-0.314	-2.869*
			(-0.20)	(-2.14)
4+	-0.416	-0.528	-0.427	-0.333
	(-1.05)	(-1.31)	(-1.07)	(-0.80)
Constant	-0.945	-7.650**	0.743	-2.255
	(-0.37)	(-2.86)	(0.25)	(-0.70)
Log Likelihood	-64.92	-71.21	-63.2	-66.2
N	800	825	800	825

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

While my analysis supports the hypothesis that there is a negative relationship between per capita income and post-conflict risk, it does not support that economic growth reduces post-conflict risk. The effect of economic growth is negative and significant at 5 percent level in both CHS models. In the two ACD models it is highly insignificant, and the effect is close to zero when controlling for economic freedom (model 3). The findings correspond with the argument in chapter 2: there might not be a straightforward negative relationship between economic growth and post-conflict risk. Of course, in the end economic growth will reduce post-conflict risk by contributing to per capita income. However, we know little of the effect of economic growth in the short run, and it might be wise to consider other opportunities in order to reduce post-conflict risk.

According to CHS such an opportunity is to spend more on UN peace keeping forces. A problem when estimating the effect of UN peace keeping expenditures is that expenditures are possibly biased according to the level of risk. To an extent they argue; they are able to control for this by including a dummy which take the value 1 if troops are not deployed. Doing this they find that post-conflict risk are lower where UN peace keeping troops are not deployed, but that peacekeeping expenditures reduce the risk of further conflict: "The effect is large: doubling expenditures reduces the risk from 40% to 31%" (Collier *et al.* 2008: 473). In contrast to this the results in my analysis are highly insignificant, weak and changes direction. However we only partially control for biasness and UN peace keeping forces in the wake of civil war was seldom deployed before the end of the cold war. Consequentially; this analysis does not provide much information regarding the effect of UN peacekeeping expenditures. CHS (2008: 470) conclude that post-conflict risk is significantly lower in highly authoritarian regimes: "If the polity is highly autocratic, the risk is only 24.6 %, whereas if it is not highly autocratic the risk more than doubles to 62%". In the ACD models the effect is weak and highly insignificant. Based on this it should be clear that apart from per capita income the CHS findings are highly sensitive to changes in the dataset.

3.5 CONCLUSION

In order to test the robustness of CHS findings I change from the COW to the ACD database. Doing this I find that the *effect of per capita income* becomes stronger and more significant, indicating that post-conflict risks will be higher in poor countries. The effect of *economic growth*

however, becomes highly insignificant, and the size of the effect is close to zero when controlling for economic freedom. As was suggested in chapter two this might indicate that there does not exist a straight forward relationship between economic growth and post-conflict risk. Accordingly the idea that economic growth will reduce post-conflict risk, at least in the short run, is perhaps mistaken. As such a change is substantial should be of relevance for *policy making*, figuring out what causes the change should prove valuable. In the next chapter I investigate six possible explanations: (1) differences in the other independent variables, (2) differences in the dependent variable, (3) influential observations, (4) inconsistencies between COW and CHS (5) differences regarding which conflicts are included in COW and ACD and (6) different start and end dates.

4 WHY THE BIG DIFFERENCE?

In this chapter I examine why CHS' findings indicate that *faster economic growth* "directly and significantly reduce risk in the year which it occurs" (Collier et al. 2008: 469), while my analysis does not support the existence of such a relationship. In order to explain the change in the effect I examine six plausible explanations: (1) differences in the other independent variables, (2) differences in the dependent variable, (3) influential observations, (4) inconsistencies between COW and CHS (5) differences regarding which conflicts are included in COW and ACD and (6) different start and end dates. I find that the change in the effect is partially caused by inconsistencies between COW and CHS and different conflicts being included. However, differences in start and end dates causes the main part of the change. This should demonstrate the importance of coding start and end dates in accordance to a valid definition of post-conflict peace as well as the importance of robustness tests.

4.1.1 The Independent Variables

My post-conflict dataset differs from the dataset used by Collier, Hoeffler and Söderbom's (CHS) on several aspects. Firstly, I was not able to locate the regional autonomy variable or the election variables. Secondly, I had to substitute the CHS' UN expenditure data with a similar dataset collected by Hegre, Heir and Nygård (2009).[24] Thirdly, when I introduce variables from the exact same sources as theirs, I find that some of these differ as well. One example of this is the economic freedom variable. Just like CHS' I collected this variable from the Economic Freedom Network,[25] and therefore expect it to be identical. Nevertheless, when I introduce the one I collected into their dataset, I find that the correlation between the two economic freedom variables is merely 0.83. In order to avoid spending too much time examining differences between the independent variables, I exclude all variables except: *per capita income* and *economic growth*, and *plus four years* in the analysis. The latter is included because it is part of the piecewise exponential method.

Like CHS I collected the GDP per capita data from the World Bank's World Development Indicators. While theirs are from 2005 and measured in 1995 dollars, mine are from 2007 and

[24] When introducing this one into CHS dataset I find that the two *UN Expenditure* variable correlate with 0.64.
[25] See www.freetheworld.com

measured in 2000 dollars.[26] To make sure that differences in the results are not caused by differences in the GDP data I replace their GDP data with the ones I have collected.[27] Economic growth is calculated as the difference between log per capita $year_{x+1}$ and $year_x$.[28] The more similar results become when running the analysis without the other independent variables, the more it indicates that the divergence in the effect is caused by differences in the other independent variables.

Table 4-1 *Excluding the other independent variables*

	(CHS)	*(CHS)*	*(ACD)*	*(ACD)*
Per Capita Income		-0.382*		-0.570**
		(-1.97)		(-3.06)
Economic Growth	-2.799*	-2.943*	0.462	0.342
	(-2.28)	(-2.39)	(0.22)	(0.18)
4+	-0.892*	-0.767*	-0.681	-0.398
	(-2.44)	(-2.06)	(-1.82)	(-1.04)
Constant	-8.572***	-6.303***	-2.944***	0.496
	(-33.14)	(-5.49)	(-10.57)	(0.45)
Log Likelihood	-86.21	-84.66	-73.02	-67.3
N	819	819	800	800

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4-1 shows the effect of economic growth and per capita income when excluding the other independent variables. The effect of economic growth in CHS' models continues to be significant at the 5 percent level, but the size of the effect is slightly reduced[29]. Looking at the ACD models in Table 4-1 the effect of economic growth is not only highly insignificant, but it also changes direction; suggesting that economic growth might increase post-conflict risk. Thus the size of the difference in the effects remains more or less the same, and we have to examine other possibilities to explain the change in the results.[30]

[26] Both are reported as *log per capita income.*
[27] This might be somewhat superfluous: When merging the 2007 income variable into the CHS dataset I find that the two variables correlate with 0.998.
[28] This is the same procedure that is used in CHS.
[29] The N decreases in this model from 825 to 819. This is due to Serbia & Montenegro being missing in the 2007 WDI, but not in the CHS dataset, I have run the CHS analysis with missing data for Serbia & Montenegro and this does not change the results.
[30] In order to exclude as many differences as possible between the two datasets I will continue to use the GDP data from 2007.

4.1.2 From Days till Years

While CHS operate with exact dates, my ACD post-conflict dataset operates with year. As was argued in section 3.1.3 this will make the *peace duration* estimates less precise and might influence results. In order to examine the impact of differences in the measurement level; I convert the duration variable of CHS into years instead of days.

Table 4-2 *Changing the measurement level from days till years*

	(Days)	*(Days)*	*(Years)*	*(Years)*
Per Capita Income		-0.382*		-0.415*
		(-1.97)		(-2.14)
Economic Growth	-2.799*	-2.943*	-2.701*	-2.857*
	(-2.28)	(-2.39)	(-2.16)	(-2.28)
4+	-0.892*	-0.767*	-0.856*	-0.689
	(-2.44)	(-2.06)	(-2.34)	(-1.84)
Constant	-8.572***	-6.303***	-2.697***	-0.245
	(-33.14)	(-5.49)	(-10.42)	(-0.21)
Log Likelihood	-86.21	-84.16	-80.27	-77.95
N	819	819	819	819

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The two first columns in Table 4-2 show the results when the dependent variable in CHS is estimated by exact dates,[31] and the two lasts show the results when it is transformed into an annual variable. Changing from days till years does not change the estimated effect of economic growth on peace duration.

4.1.3 Influential Observations

If the change is driven by a few influential observations this will not only explain the change in the result, but it might be appropriate to exclude these observations from the analysis. If results are driven by a few observations alone, basing policies on these can be risky. One way of examining the influence of individual observations on parameter estimates is to consecutively drop the observation from the dataset and re-estimate the model, repeating the procedure for each *ith* observation (Box-Steffenmeiser and Jones 2004: 127-128). However doing so is of course

[31] These are identical to model 1 and 2 in Table 4-1.

immensely time consuming when datasets are large. Instead, an alternative is to calculate *efficient score residuals* (Cleves *et al.* 2008: 217). These will be calculated by using the Cox model. As the influential observations are likely to be the same in Cox as in a piecewise exponential model, this should not be problematic. After identifying the influential observations I run the analysis, using the piecewise exponential model.

By calculating the *efficient score residuals* I find that none of the CHS observations score above |0.5|. Accordingly, none of the observations are regarded as critical. In the ACD post-conflict dataset three post-conflict episodes have efficient score residuals above |0.5| and can be regarded as critical. In order to examine whether the change in results are driven by these post-conflict episodes, I add three dummies controlling for these to the analysis. This method gives the exact same result as if the pos-conflict episodes were excluded.

Table 4-3 *Excluding Influential Observations*

	All "included"	*Liberia*	*Rwanda*	*Indonesia*	*All "excluded"*
Economic Growth	0.462	0.126	0.587	0.472	0.324
	(0.22)	(0.07)	(0.34)	(0.22)	(0.20)
4+	-0.681	-0.650	-0.614	-0.618	-0.509
	(-1.82)	(-1.73)	(-1.61)	(-1.62)	(-1.29)
Constant	-2.944***	-2.981***	-3.014***	-3.008***	-3.128***
	(-10.57)	(-10.53)	(-10.40)	(-10.38)	(-10.14)
Log Likelihood	-73.01	-72.5	-71.95	-72.22	-70.53
N	800	800	800	800	800

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The first column in Table 4-3 shows the effect of economic growth when not controlling for any of the critical post-conflict episodes.[32] The last column shows the effect when controlling for all three critical post-conflict episodes. Table 4-3 shows that the effect becomes stronger in two of the models, and weaker in two. However, controlling for these episodes does not alter the conclusion substantially; the effect of economic growth continues to be both positive and highly insignificant. As neither variation in the independent variables, differences in the measurement

[32] It is identical to column 3 in Table 4-1.

level or influential observations explain the change in the effect of economic growth, I have to examine features of the unit of observation; the post-conflict peace.

4.2 DIFFERENCES BETWEEN COW AND CHS

Differences regarding the post-conflict peace both concern which post-conflict peace episodes are included, when they start and when they end. Such differences can be both systematic and unsystematic. While systematic differences can be debated and discussed theoretically, unsystematic differences are by and large due to questionable reliability and are thus best avoided. In order to investigate the systematic and unsystematic differences between CHS and the ACD post-conflict dataset it is necessary to look at the conflicts behind the post-conflict peace episodes. To do so I compare the COW database with the ACD conflict dataset. The ACD conflict dataset is like my post conflict dataset based on criterion 4, and the high battle deaths estimate of Lacina and Gleditsch. To recap this means that for a conflict to be included it must accumulate to 1000 battle-deaths during subsequent active conflict years. A year will be counted as active as long as there are more than 500 battle-deaths. The conflict starts and ends the first and last year with more than 500 battle-deaths.[33]

Before I start comparing COW and the ACD conflict dataset I inspect whether there exists inconsistencies between CHS and COW. In order to do so I generate a post-conflict dataset based on COW's conflict and start and end dates. I merge this together with CHS and investigate the observations that do not match. Doing so, I find that four conflicts included in COW are not reported in CHS, see Table 4-4. This means that the post-conflict episode of Morocco is excluded from the dataset and the duration of the post-conflict episodes in Sri Lanka, Indonesia and Yugoslavia (Serbia) is overestimated. Two conflicts are reported in CHS, but are not to be found in the updated COW database, which means that the duration of the post-conflict episodes of both Chad and Sri Lanka are underestimated. CHS report that the 2nd Chechen conflict ended in 2001. Consequentially a post-conflict peace episode starts that year. According to COW, however, the conflict did not end until the 31st of December 2004.

[33] From here on this will be referred to as the ACD conflict dataset.

Table 4-4

Conflicts that appear in COW only	*Conflicts that appear in CHS only*
Morocco: 11. 12 1975- 23.12 1983	Chad: 01.01 1998 - 31.12 2001
Sri Lanka: 01.01 1995- 31.12 2001	Sri Lanka: 25.07 1987- 24.05 1990
Indonesia: 07.12 1975- 04.07 1977	
Yug (Serbia): 01.01 1998-31.12 1999	

The first unit of observation in CHS' peace periods is the year the conflict ends. The last is the year before conflict breaks out again. If no conflict breaks out the last observation is the year 2002. Nevertheless, for 10 peace periods the last year of observation is the same year as conflict breaks out. In order to investigate whether results are affected by these errors I update the CHS dataset, and exclude these errors. Model 1 and 2 in Table 4-5 show the results when the analysis is run on the original CHS dataset. Model 3 and 4 show the results when using the updated CHS dataset. Model 5 and 6 show the effects when the peace duration variable of the updated CHS dataset is turned into years.

Table 4-5 *Updating CHS' dataset*

	Original Days	*Original Days*	*Updates Days*	*Updated Days*	*Updated Years*	*Updated Years*
Per Capita Income	-0.382*		-0.415*		-0.433*	
	(-1.97)		(-2.15)		(-2.25)	
Economic growth	-2.943*	-2.799*	-2.738*	-2.606*	-2.597*	-2.450
	(-2.39)	(-2.28)	(-2.15)	(-2.06)	(-1.99)	(-1.88)
4+	-0.767*	-0.892*	-0.692	-0.852*	-0.643	-0.824*
	(-2.06)	(-2.44)	(-1.87)	(-2.35)	(-1.73)	(-2.27)
Constant	-6.303***	-8.572***	-6.096***	-8.562***	-0.127	-2.697***
	(-5.49)	(-33.14)	(-5.34)	(-33.58)	(-0.11)	(-10.56)
Log Likelihood	-84.16	-86.21	-79.3	-81.73	-76.01	-78.7
N	819	819	802	802	801	801

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

While the effect of per capita income becomes stronger as we move towards the right in Table 4-5, the effect of economic growth becomes weaker. In the last model economic growth is only

significant at the 10 percent level. When searching for the effect of changing from COW to ACD; it is necessary that everything else is as similar as possible. Thus the last to models are the ones to compare with the ACD results. In these two models there are no inconsistencies between COW and CHS, and the duration variable is as in ACD measured in years and not in days. The effect of economic growth is only significant at the 10 percent level when not controlling for per capita income. As everything else is the same, the remaining difference in result must be ascribed to differences regarding the COW and ACD conflict database.

4.2.1 Which Conflicts are Included?

In order to examine the effect of changing from COW to the ACD conflict dataset I start by comparing the contested incompatibilities registered in the two databases. I identify 91 contested incompatibilities that take place in 63 countries. Out of the 91 contested incompatibilities 57 appear in both datasets, 11 and 17 are found only in the COW and ACD, respectively, and 6 of the conflicts might be the same, but I am not sure.[34] These differences may be both systematic and unsystematic. This comparison however, has some weaknesses: The focus in ACD is on incompatibilities. All incompatibilities are given a unique id number. However, if two separate groups are both trying to take control over state power, these are given the same id number. The reason to do so is that the incompatibility is the same. To the extent that the conflict description of COW can be identified with one or more of the groups fighting during ACD's conflict period, the conflicts are coded as the same. If the same id number breaks out several times, the other conflict periods do not necessarily correspond to the one in COW. In order for a conflict episode in ACD to be coded as the same as one in COW, the specific conflict episode must have connections to the one in COW. It is not sufficient that another conflict period with the same id corresponds to one or more conflict periods in COW.

One example of this is id number 70, an internal war in Ethiopia. The conflict broke out for the first time in 1960 between the Ethiopian government and a military faction led by Mengistu Neway, and ended the same year. The second time it broke out was in 1976. This time it was between the Ethiopian government, and Ethiopian People's Revolutionary Party (EPRP) and Tigrayan People's Liberation Front (TPLF). COW reports that a conflict between Ethiopia and

[34] For a table over the conflicts I assume are the same, see Table A-5 in the Appendix.

Tigrean Liberation Front started in 1978. This conflict then corresponds to the second conflict in the ACD, but not the first and I code the conflicts accordingly. During the second conflict period there are several years were only EPRP is active, and not TPLP. It might be a mistake to include these conflict years in the analysis when only comparing the conflicts that appear I both datasets. However, the alternative of excluding the conflict years with TPLP is both time consuming and implies that the conflict period is split into several smaller parts, making it less similar to COW.

4.2.2 Systematic Differences

There are three systematic differences between the two databases possibly causing discrepancies regarding which conflicts are included. Two concern differences in the definition of civil war and one regards which deaths are counted as battle-deaths. In their definition COW includes a resistance criterion "the stronger side should suffer at least 5 percent of the causalities of the weaker side". As the ACD definition does not include any resistance criterion, conflicts that are excluded from COW might be included in ACD. As there is little information available about why specific conflicts are not included in the COW database, it is hard to tell whether any of the 17 conflicts are excluded due to lack of resistance. The other systematic cause stems from ACD focusing on the *contested incompatibility* between *organized actors*. If incompatibility is unclear, or actors are not organized the conflict is not included in the database. Out of the 11 conflicts that only appear in COW, 6 are excluded from the ACD list due to unorganized actors or unclear incompatibilities (Gleditsch *et al.* 2001).

Differences regarding which deaths are counted as battle-deaths can affect which conflict episodes are included in the database. Firstly, if the documentation criteria are stricter in Lacina and Gleditsch than in COW, battle-deaths will tend to be higher in COW. A conflict which accumulates to more than 1000 battle-deaths in Lacina and Gleditsch, might only accumulate to 800 in COW, and will therefore be excluded. As there exist little information of how battle-deaths are counted in COW,[35] it is not possible to decide whether this affects the results. Secondly if the operationalization of battle-death differ from Lacina and Gleditsch (2005) to COW, this will cause different battle-deaths estimates. Lacina and Gleditsch (2005: 148) define battle-death as "all people, soldiers and civilians, killed in combat". Small and Singer (1982: 213)

[35] According to Kristian S. Gleditsch. Personal communication with the author 30.04.2009.

claim that they have counted civilian as well as military deaths in civil war. However, it is not clear whether they have counted civilian deaths due to rebel attacks (Sambanis 2004: 822).

4.2.3 Unsystematic Differences

Unsystematic differences concern both the inconsistency in COW's coding criteria and a general reliability problem in quantitative conflict studies. If COW has, as Sambanis (2004) suggests, used a cumulative criterion in most of the cases, but an annual criterion in others, it might explain the exclusion of some of the 17 conflicts that appear in the ACD conflict dataset only.[36] Out of the 17 conflicts that occur in the ACD conflict database only, the *high battle-deaths estimate* in Lacina and Gleditsch imply that five of the conflicts never experienced a single year with more than 1,000 battle-deaths. Consequentially, almost one third of the conflicts are potentially excluded due to inconsistencies in the coding criteria.

The second cause concerns a general reliability problem in quantitative conflict studies. Lacina and Gleditsch (2005) argue that reconstructing the course of event during war, is a hard task to fulfil. Unlike in interstate wars one of the groups is not representing the government. Identifying who is and is not a member of the rebel army is often difficult (Gates and Strand 2004: 3). This might lead one research group to draw the conclusion that the deaths occurred during combats between the government and rebels groups, while the other group concludes that battles were not related to the conflict. This makes it plausible that two research groups adopting the same coding criteria could reach different results. Accordingly changes regarding which conflicts are included do not necessarily comply with differences regarding the definition of civil war or inconsistencies in the COW coding criteria. Differences might be caused by two research groups not reaching equal battle-deaths number. The nature of war makes it very difficult to count battle-deaths. Consequentially the reliability problem might be greater than in e.g. voting studies. If so is correct, robustness tests become even more important.

4.2.4 Does the Inclusion of Conflicts Matter?

In order to examine whether differences in which conflicts are included cause the change in the effect, I construct two post-conflict datasets based only on the conflicts that appear in both COW

[36] This one is just like ACD post-conflict dataset constructed based on criterion 4 and the high battle-death estimate.

and ACD conflict dataset. When coding the start and end years in the post-conflict datasets I use the start and end years from COW and the ACD conflict dataset. Like CHS I focus on the state, and not on the conflict. The conflict ends when there is no war within the state, and the peace collapses if war breaks out again, no matter if the incompatibility is the same or a new one. I exclude the post-conflict years with missing GDP data. This leaves me with 49 contested incompatibilities occurring in 42 countries. I run the analysis using a piecewise exponential model, to test whether results are more similar this time.

Table 4-6 *The effect when only including the same conflicts*

	(COW)	*(COW)*	*(ACD)*	*(ACD)*
Per Capita Income		-0.229		-0.310
		(-1.06)		(-1.24)
Economic Growth	-1.838	-1.922	1.920	1.554
	(-1.32)	(-1.40)	(0.97)	(0.82)
4+	-1.325**	-1.276**	-0.979*	-0.919*
	(-3.12)	(-2.98)	(-2.13)	(-1.98)
Constant	-2.515***	-1.103	-2.946***	-1.036
	(-9.82)	(-0.82)	(-9.03)	(-0.67)
Log Likelihood	-68.67	-68.10	-51.79	-50.99
N	588	588	576	576

The analysis is based only on the contested incompatibilities that appear in both datasets.
t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4-6 shows the differences in the results when only including the contested incompatibilities that appear in both datasets. Model 1 and 2 are based on the updated COW database and model 3 and 4 are based on the ACD conflict dataset. The effect of economic growth is no longer significant in the two CHS models, making results more similar. Nevertheless when looking at the ACD models it becomes clear that the effect of economic growth has become stronger, and results are less insignificant than they were in Table 4-1. While the substantial difference is reduced, the size of the distance remains more or less the same.

Before examining the differences regarding start and end years, I want to test whether it is the exclusion of a particular group of COW's post-conflict episodes that causes the shift in significance. The conflicts which are excluded from COW can be split into three groups; (1) four which I do not know whether are the same as any of the ACD conflicts, (2) six which are

excluded from ACD due to unorganized actors or unclear incompatibilities and (3) five which I am not sure why are excluded. I run the analysis and include these groups one by one.

Table 4-7 *Including the excluded COW wars-one by one group*

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Per Capita Income		-0.279		-0.256		-0.319
		(-1.39)		(-1.30)		(-1.57)
Economic growth	-1.876	-1.936	-2.190	-2.296	-2.082	-2.197
	(-1.38)	(-1.43)	(-1.66)	(-1.76)	(-1.53)	(-1.65)
4+	-1.153**	-1.087**	-1.096**	-1.029**	-0.975*	-0.878*
	(-3.03)	(-2.83)	(-2.88)	(-2.68)	(-2.54)	(-2.25)
Constant	-2.520***	-0.830	-2.583***	-1.036	-2.611***	-0.646
	(-10.40)	(-0.68)	(-10.29)	(-0.87)	(-10.12)	(-0.52)
Log Likelihood	-77.6	-76.6	-77.6	-76.75	-73.68	-72.42
N	665	665	712	712	659	659

The table shows the results when the three groups are included one by one: Model 1 and 2 gives the results when the four conflicts that might be included in the ACD dataset are included. Model 3 and 4 gives the results when the groups that are excluded due to unorganized or unclear incompatibility are included. Model 5 and 6 gives the results when the five conflicts which I do not know why have been excluded are included.

Table 4-7 shows that results are significant at the 10 percent level only in model 4; when including the conflicts that are excluded due to unclear incompatibility or unorganized actors. It might be argued that post-conflict risk will be the same independently of whether the actors are organized or incompatibility is unclear. Comparing model 3 and 4 with model 5 and 6 differences are quite small. Thus it might seem that the reduction in effect and significance is not caused by the exclusion of *one* particular group, but rather the exclusion of all 15 incompatibilities.

4.3 START AND END DATES

As the main of the difference remain, this must be ascribed to differences in start and end dates. If it is correct that COW has used a cumulative criterion on most of their database, we are left without the necessary knowledge of how start and end dates are coded (Sambanis 2004). If conflict episodes tend to last longer with COW's start and end dates it might be wise to

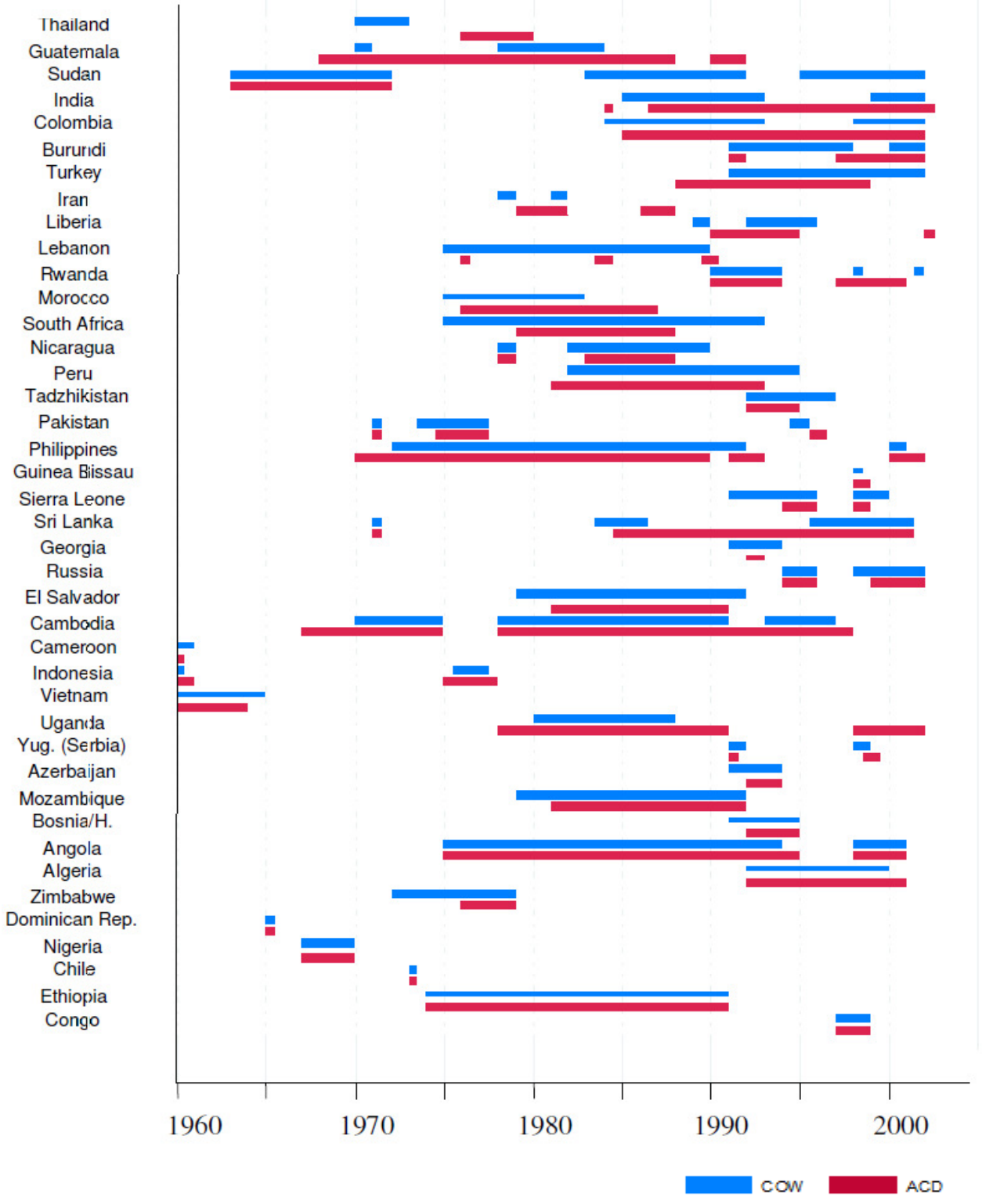
reconsider the annual part of criterion 4; 500 battle-deaths.[37] However, when checking the mean duration of the conflict episodes I find that it is approximately the same in both datasets; 7.1 and 6.8 in ACD and COW, respectively. If I estimate the mean duration of the incompatibilities I find that it is slightly higher with ACD's start and end dates; 11.1 vs. 9.6. Nevertheless the differences in start and end dates are rather unsystematic: 23 of the incompatibilities last longer with COW's start and end dates, 20 last longer with ACS's and 14 lasts just as long in both.[38] As differences in start and end dates are not systematic they can have three plausible sources: (1) if different criteria have been used when coding battle-deaths, this will affect start and end dates. (2) A general reliability problem implying that different research groups get different results when counting the number of battle-deaths. And (3) Inconsistencies in COW's coding criteria. It should be clear that not only are these the causes behind different start and end dates, but also the *main reason why the effect of economic growth on post-conflict risk differs when changing to the ACD dataset.*

Figure 4-1 shows the differences in start and end dates of COW and ACD. In total there are 136 post-conflict peace years that only appear in one of the two datasets, and 514 peace years that appear in both.[39] The blue line refers to the conflict years with COW's start and end dates, and the pink line refers to the conflict years with ACD's start and end dates. The most similar countries can be found at the bottom, and the most different at the top. Thailand stands out were none of the conflict years are the same. In fact it takes three years from it ends in COW till it starts in ACD.[40] By comparing the conflicts I find that 18 conflict episodes start earlier in COW, 7 start earlier in ACD, 16 end earlier in COW and 13 end earlier in ACD. There are 63 conflict episodes in COW and 62 in ACD. Based on this it should be clear that differences in start and end dates are rather unsystematic.

[37] For a description see section 3.3.
[38] I compare the sum of all the conflict years related to the specific *incompatibility*.
[39] The figure is somewhat misleading because it does not the capture post-conflict peace episodes that last less than one year. As these are 5 in the COW dataset, and 1 in the ACD dataset, I run the analysis excluding these. When doing this, results do not become more similar.
[40] This is when using criterion 4 and the *high* battle-deaths estimate. However, no conflict year is reported in ACD before 1974, one year after it ends in COW.

Figure 4-1

Differences in Start and End Dates



Based on this it should be clear that the effect of economic growth depends on when start and end dates are set. The importance of valid start and end dates does not only apply to the study of the effect of economic growth on post-conflict risk, but to any study of the duration of the post-conflict peace. When start and end dates are based on *battle-deaths estimates* they both depend on the accuracy of the estimates and the battle-death threshold criterion. Battle-deaths estimates will always include uncertainties; this should advocate the importance of robustness tests. One alternative then is as done here to run the analysis on different datasets. As was argued in section 3.1 the battle-death threshold should be set in accordance with a valid definition of post-conflict peace.

4.4 CONCLUSION

When applying the analysis on my post-conflict risk dataset, the size of the effect of economic growth becomes weak and highly insignificant. In order to explain the change in the effect I have examined differences regarding the other independent variables, influential observations, differences in the measurement level of peace duration, inconsistencies between COW and CHS, which conflicts are included in COW and ACD, and differences regarding start and end dates. I find that the difference can partially be explained by inconsistencies between COW and CHS, and different conflicts being included. However, the main change comes from differences in start and end dates. This should demonstrate both the need for robustness tests, and the importance of start and end dates being set in accordance with a valid definition of post-conflict peace. The definition of conflict used in my ACD post-conflict dataset implies that the peace starts as soon as there are less than 500 battle-deaths occurring in one year. Applying a strict definition of conflict implies that the definition of becomes wide, and maybe too wide. In order to increase the validity of the study, in the next chapter I change to what I consider to be a more valid definition of post-conflict peace. I also change to an alternative GDP database to avoid the problem of missingness, include alternative control variables to reduce biasness and change to a method that better accounts for repeated events.

5 POST CONFLICT RISKS

The aim of this chapter is to improve the validity of post-conflict peace, reduce biasness caused by missing data, change the control variables to better control for endogeneity and spuriousity, and change to a method that better accounts for repeated events. Doing this I find that low per capita income levels are associated with higher post-conflict risk. The effect is strong and significant. The effect of economic growth however, continues to be both weak and insignificant. Accordingly the analysis does not support that increasing economic growth will reduce post-conflict risk, at least not in the short run. As the effect of per capita income on post-conflict risk is strong and negative, economic growth will in the long run reduce post-conflict risk by contributing to the income level. Nevertheless, as post-conflict risk tends to be highest when war ends, the crux is normally how to make it though the first decade. The lack of significant result is either due to (1) that no such relationship exists, (2) noise in the data or (3) that economic growth affects conflict risk in both directions. I argue that to get a more nuanced picture of the role of economic growth in post-conflict societies we need to develop testable theories.

5.1 DEFINING POST-CONFLICT PEACE

What is the rationale for studying post-conflict peace episodes? After months, or years of fighting, the belligerents have finally put their weapons aside. This might be just a breathing space, before fighting breaks out again. But it can also be the end of the war, and hopefully the beginning of something better. Based on this it should make sense to examine whether there is something generalizable about the peace episodes that collapse and the ones that endure. When utilizing a strict cumulative definition, the definition of post-conflict peace becomes too wide. One risks including societies where these fragile opportunities have not yet emerged. A “post conflict peace” where hundreds (though less than 500) are killed in battles, might not even be the beginning of a peace. It is just as likely to be a small reduction in the intensity of the civil war, which is soon to rise again. In order to avoid including elements of conflict intensity into the study of the duration of the post-conflict peace, I alter the definition of armed conflict: For a conflict to be included it must have claimed at least 25 battle-related deaths per year and an accumulated total of at least 1,000.

When doing so I use the start and end dates from the Armed Conflict Database (ACD). The start date is given as the date, as precise as possible, when a given episode of conflict activity reaches 25 battle-deaths in a year. The end date is given as the date when the conflict activity ended (Harbom *et al.* 2009: 4). In order for a conflict episode to be included in the analysis, subsequent active conflict years (more than 25 battle-deaths) must accumulate to 1,000 battle-deaths.[41] If there are two ongoing conflicts within the state at the same time which alone accumulates to less than 1,000, but in total to more than 1,000 these will not be included. If there are two ongoing conflicts[42] within the state that overlaps I will use the start date of the first conflict to break out and the end date of the last conflict to end. As data are available until 2007 I expand the time frame of the analysis from 1960 to 2007. This yields a dataset which includes 81 post-conflict episodes in 59 countries. Out of the 81 post-conflict episodes 34 (42 percent), collapse before the 31st of December 2007. When excluding observations with missing GDP data the number of post-conflict episodes reduces to 67, and the number of countries to 52. Out of the 67 peace episodes 24 (35.8 percent), collapse.

5.2 WHICH MODEL TO CHOOSE?

In their analysis Collier Hoeffler and Söderbom (CHS) utilize a parametric model; the piecewise exponential model. Parametric models refer to all survival models that include assumptions of the effect of the passage of time; the *baseline hazard* rate (Golub 2008: 530). CHS for example assume that the baseline hazard rate is the same within intervals of four years and less, or more than four years. The benefit of using a parametric model is that if the effect of time is correctly specified a parametric model will yield slightly more precise estimates and reveal information about predicted survival times (Box-Steffenmeiser and Jones 2004: 21, 86). Box-Steffenmeiser and Jones argue that it is appropriate to apply parametric models when there exist a strong theoretical expectation about the "shape" of the hazard rate. A problem is that sufficiently strong expectations rarely exist in political science (Golub 2008: 534).[43] As the choice of shape

[41] As the focus of the thesis no longer is to replicate CHS study, in order to reduce uncertainty I utilize the *best* instead of the *highest* battle-death estimate of Lacina and Gleditsch (2005).
[42] Assuming that both meet the battle-death criteria.
[43] Instead, researchers often employ graphical and other diagnostic techniques to justify their choice of a particular parametric model, especially plots of the hazard function and the residuals. However, relying on raw hazard or survival plots entails the completely untenable assumption that no covariates are related to survival time (Golub 2008: 534)

fundamentally affects the estimated coefficients, fitting a possibly erroneous baseline to the data can impart enormous bias to the results (Golub 2008: 534).[44]

Consequentially "a particular shape should only be chosen on strong theoretical grounds, and never simply because it proves convenient" (Golub 2008: 534). The question then becomes whether there are sufficiently strong and valid theoretical reasons to expect that the post-conflict baseline hazard takes a particular shape? In the long run post-conflict risk is likely to decrease (Collier *et al.* 2003: 104). After a certain amount of time it is probable that civil war risk converges to be the same as for a state that scores the same on every other conflict affecting parameter, but which has not endured a civil war. However, we do not know how long it takes, nor what happens in between. Although post-conflict risk is likely to decrease in the long run, there is not necessarily a linear risk reducing trend from the day war ends. It might just as well be increasing in the start before it slowly starts to decrease. It might also look like a laterally inversed N, decreasing the first years, before it starts to increase and reaches a top before it starts to decrease again. We have few, if any, sufficiently strong theoretical reasons to expect any sorts of regularities regarding the baseline hazard shape of post-conflict societies.[45] The alternative then is to use the semi-parametric Cox-model: "For a Cox model, the baseline hazard rate does not have a parametric form but instead can be estimated from the data" (Golub 2008: 531). The downside of using a Cox model is that estimates become slightly more imprecise; however it does not lead to biased, incorrect results.

5.2.1 Repeated Events

A problem with most duration models, the Cox model included, is that they do not account for repeated events. An important feature of post-conflict peace episodes is their repeatability. If a post-conflict peace collapses, it will be repeated as soon as the new civil war ends. Out of the 57 countries in the dataset, 16 experience two or more post-conflict episodes.[46] When applying a model that does not account for repeated events; the first, second and third post-conflict peace episodes are treated as completely independent of each other.

[44] The same argument can be found in Allison (1984), Box-Steffenmeiser and Zorn (2001), Bennett (1999), and Box-Steffenmeiser and Jones (1997) and (2004).
[45] CHS do not provide any arguments justifying their choice of a piecewise exponential model.
[46] For the limited version where missing GDP data is removed the number is 10 out of 51.

Box-Steffenmeiser and Zorn (2002: 1071) suggests that this might yield misleading results for at least two reasons: "Firstly, the presence of correlated events presents a problem similar to autocorrelation in conventional regression analysis: by treating such observations as independent, we overstate the amount of information each observation provides, leading to incorrect estimates of standard errors. Secondly, such models implicitly restrict the influence of covariates to be the same across events when, in fact, there might be varying effects from one event occurrence to the next." In order to test whether repeated events affect the results I also run the analysis using the Conditional Elapsed Time model. In this model event k cannot find place unless event k-1 has already emerged. Time restarts when a new post-conflict peace episode starts, independently of how long the preceding episode lasted (Box-Steffenmeiser and Zorn 2002: 1075). The Conditional Elapsed Time model is a variance correcting method. Hence, if correctly specified, results should have some resemblance to the once estimated by Cox.

5.3 CONTROL VARIABLES

The focus in this analysis, unlike CHS', is only on the effect of *per capita income* and *economic growth*. I try to isolate post-conflict risk by controlling for two variables known to increase general civil war risk *population size* (see: Hegre and Sambanis 2006) and *civil war in neighbourhood countries* (see: Buhaug and Gleditsch 2008).[47] I also include five variables that can provide additional information of the relationship between the two economic variables and post-conflict risk; *political regime type, per capita income change during war, aid* and two *UN Peace Keeping Operation* variables.

The effect of economic growth might depend on the regime type. Both Lipset (1959) and Lenski (1966) claim that mechanisms inherent in democratic regimes will facilitate economic distribution (Sirowy and Inkeles 1990: 135). In section 2.3 I argued that economic growth is likely to reduce post-conflict risk through four mechanisms regarding the *rebels' opportunity costs, lootability of the economy,* and *the state's military apparatus.* It is however likely to increase post-conflict risk through the *size of the possible reward*. Economic growth centred at the top and not benefitting the lower strata of the population; will only affect the size of the possible reward, and possibly the state's military apparatus. If this is the case economic growth

[47] Thanks to Håvard M. Nygård for providing me with the neighborhood variable. Neighborhood war is defined based on a annual battle-death threshold of 1,000.

will not generate new job opportunities, nor modernize the economy, and the risk reducing effect will be marginal. Thus, given that the distribution of economic growth differs from democracies to authoritarian regimes; the effect will be clearer when controlling for political regime type.[48]

CHS utilize the political regime variable constructed by the Polity IV project (Gleditsch 2003). According to Gates *et al*. (2006: 897) it is problematic to use this variable in a conflict study, since violence is included as a part of the coding criteria. Consequentially, when using the polity variable in a conflict study; violence appears on both sides of the equation mark. One solution is to use the polity variable provided by Gates *et al*. (2006).[49] This is a combination of the executive constraint and executive recruitment part from Gleditsch' (2003) polity variable, and the participation dimension from Vanhanen (2000). None of these include any information about violence. The problem is that data are only available till 2000. The variable is only included in the two last models.

5.3.1 Spuriousity and reversed causality

So far my analysis has not supported the claim that there is a strong negative relationship between economic growth and post-conflict risk. In fact it has even suggested the reverse; that economic growth might increase post-conflict risk. There are two reasons to suspect that results might be biased, and therefore make it hard to discover a negative and significant relationship between economic growth and post-conflict risk.

Firstly, it might be a result of a "spring mechanism": If the economy has been severely damaged during the war, growth might jump when peace finally arrives; if for no other reason than that the effect of going back to normality will be substantial. In order to test whether this is correct I run a regression analysis estimating the effect of change in GDP per capita during wartime on economic growth the two first years of the peace period.[50] I find that the effect is negative and significant at the 0.001 percent level. The finding suggests that reducing economic growth during wartime with a 1 percentage point, increases economic growth the two first years of the peace

[48] I also include an interaction variable between regime type and economic growth.
[49] Data are available from: http://www.prio.no/CSCW/Datasets/Governance/MIRPSSIP/ For a detailed description of the variable see Gates *et al*. (2006).
[50] I have only included economic growth for the two first years of the post-conflict peace. I have done this because I try to estimate the effect of going from war to peace based on the intensity of the war

episode with 0.09 percentage points. Accordingly, economic growth is expected to rise in correspondence to the damage on the economy. The damage on the economy can be seen as an indicator of the intensity of the war. Doyle and Sambanis (2000) and Hartzell *et al*. (2001: 202) measuring the intensity of the war as number of battle-deaths, find that intense war periods are followed by fragile peace episodes. Thus, the lack of a negative relationship between economic growth and post-conflict risk might be caused by spuriousity: War intensity affecting both *economic growth* and *post-conflict risk.* In order to control for biasness I introduce change in GDP capita during the war into the analysis. Secondly, it might be an incident of reversed causality. A significant part of post-conflict economic growth is aid driven. It is plausible that aid increases when post-conflict risk is high, causing biasness to results. Unfortunately I was not able to find any reliable *aid* data. However, a similar, but opposite mechanisms might also be operating. If post-conflict risk is low it is likely to (1) reduce capital flight and (2) attract foreign investors. This has the potential of increasing economic growth.[51]

In order to control for endogeneity CHS gives *per capita income* and *economic growth* a two and a one year lag, respectively. Miguel *et al*. (2004: 730) claim that "this approach implicitly assumes that economic actors do not anticipate the incidence of civil war and adjust economic activity (e.g., investment) accordingly. Since this is a very strong assumption, simply lagging economic variables is not a convincing solution to the endogeneity problem". Therefore in addition to giving per capita income and economic growth a two and a one year lag, I include the two UN variables: *No UN Peace Keeping Operations* and *UN Expenditures.* According to Fortna (2008) peace keepers are sent where the risk is highest.[52] Consequentially by including the UN variable I am partially able to control for variations in post-conflict risk. One problem with this is that UN Peace Keeping Operations were seldom deployed before the end of the cold war. Thus it only serves its function in the later part of the analysis. An alternative is to control for Foreign Direct Investment, but such data are also readily available only from the 80's.

[51] The argument is somewhat weakened by the dissension in the literature regarding whether Foreign Direct Investment does increase economic growth.
[52] See (Collier *et al.* 2008: 472) for a similar argument.

5.4 MISSINGNESS

Missing values is a common, but often neglected problem in quantitative research (Gleditsch 2002; Hug 2003). Gelman and Hill (2007: 530-531) differentiate between four groups of missing data: (1) missing completely at random, (2) missing at random, (3) missingness that depends on unobserved predictors and (4) missingness that depends on the missing value itself. If values are missing completely at random; if the probability of missingness is the same for all units, then throwing out cases with missing data does not make results biased. In the second group data are not missing completely at random, but all variables influencing missing probability are controlled for in the analysis. If this is done, missingness should not cause biasness. The third group is more severe, and implies that missing probability depends on variables that are not included in the analysis. Finally, a particularly difficult situation arises if the probability of missingness depends on the (potentially missing) variable itself. As mentioned in section 5.1, due to missing GDP data 14 post-conflict episodes are excluded.[53]

Gleditsch (2002: 712) argues that GDP data is often lacking for developing countries. If poor countries are the most likely to have missing GDP data, missingness depends on the missing value itself.[54] This corresponds to Gelman and Hill's fourth group. Accordingly missingness should be regarded as rather serious. The problem becomes more severe if there are systematic differences in the duration of the post-conflict peace episodes and the probability of having missing GDP data. When comparing the duration of the post-conflict peace of the excluded and non-excluded episodes, I find that mean duration is 4172 and 10378 days, respectively.[55] If poor, short lasting peace episodes are excluded from the analysis, this will introduce biasness in the results. The problem becomes even more serious if these are low growth economies as well. Apart from Egypt and Yugoslavia (Serbia) there are few reasons to believe that economic growth is higher than average in these countries.

[53] This includes all post-conflict episodes of Afghanistan, Burma, Egypt, Iraq, Somalia and Yemen, and one of the post-conflict episodes of Ethiopia (1961-1964), Cambodia (1970-1991) and Yugoslavia (Serbia) (1991-1997). In addition GDP data are missing from the following post-conflict years: Yugoslavia Serbia (1999-2000), Bosnia-Herzegovina (1995), Lebanon (1986-1989), Laos (1973-1985) and Vietnam (1964-1985). However, the latter part of the peace is included in the analysis.

[54] The argument might be somewhat modified as the only states included in this analysis are the ones that have experienced civil war after 1960. While these states are normally poor, there might not be such a clear link between missing GDP data and poverty as there would in a worldwide perspective. Take as an example Egypt vs. Congo, the latter with GDP data is probably the poorest.

[55] This differences is significant at the 5 percent level.

When data are missing systematically, it may be better to perform some best guesses with high uncertainty, than to exclude the post-conflict peace episodes all together. In his dataset Carl-Henrik Knutsen (2008) includes PPP adjusted GDP data estimated by the economic historian Angus Maddison (2006).[56] For the period 1960-2003 data are available for all country years in the dataset. While uncertainty is likely to be higher, this will reduce biasness. Model 6-10 in table 5-2 are based on Maddison's data.

Missingness also appears in the control variables. The proportion of missingness is quite small for all control variables apart from *GDP Change During War*, see Table 5.1. To handle missingness on the control variables, I do as CHS and use the modified zero-order regression method (MZOR). When using MZOR missing data is replaced by a score of 0 and a dummy variable is added to the dataset. The dummy is coded 1 if data is missing and 0 if we know its real value. The effect of the specific independent variable will be the same as if the incomplete data had been dropped (Greene 2003: 60). The advantage of MZOR is that the unit of observation continues to be included in the dataset. If the value of one unit of observation is missing on the covariate X_1, it might all the same contain information on the covariate X_2. Accordingly, when using the MZOR, the unit of observation will add information regarding X_2. Of course, if missingness is systematic, this can cause biased results as well. In order to test whether differences are systematic I run a Cox analysis estimating *peace duration* by the missing dummy variables. I find that none are significant, not even at the 10 percent level.

Table 5-1 *Missing Data: Control Variables*

	GDP missing excluded		GDP missing Included	
	Number	*Percentage*	*Number*	*Percentage*
GDP change	121	13.43 %	1	0.11 %
UN Expenditure	10	1.11 %	10	1.10 %
Population	25	2.77 %	33	3.63 %
Neighbour at War	22	2.44 %	29	3.19 %
Polity Gates *et al*.			37	5.07 %

[56] For a discussion of uncertainty regarding Maddison's estimates see Knutsen (2008: 18-20). None of the PPP adjusted GDP data in my analysis have been interpolated by Knutsen. This should make the growth variable more reliable.

5.5 DIAGNOSING THE DATASET

The Cox model presupposes that hazards are proportional. Proportional hazards (PH) implies that the hazard ratio of the independent variables do not depend on time. Hence the effect of the independent variable should be the same at any time in the analysis. Divergences from the PH assumption can lead to biased coefficients and decrease the power of significance test (Box-Steffenmeiser and Zorn 2001). In order to test whether the PH assumption holds I calculate Schoenfeld residuals and check these. The idea is to retrieve the residuals, fit a smooth function of time to them, and then test whether there is a relationship (Cleves *et al.* 2008: 200). When doing this I find no indications of violations of the PH assumption. In order to test whether there are any influential observations I calculate efficient score residuals. I do find influential observations. When controlling for these, the results remain substantially the same.

5.6 THE ANALYSIS

Models 1 to 8 in table 5-2 are based on the Cox model. Models 9 to 11 are based on the Conditional Elapsed Time model, accounting for repeated events. Column 1 to 5 shows the results when using the World Banks' GDP data. The analysis goes from 1960-2007, and the observations with missing GDP data are not included in the analysis. Model 6 to 11 are based on Maddison's (2008) income data. As no observations have missing income data, all are included. These data only goes till 2003 and since per capita income and economic growth are given a 2 and a 1 years lag, the timeframe of the analysis is limited to 2004. Model 7, 8 and 11 includes Gates *et al.* (2006)'s polity variable. For these models the time frame of the analysis is limited to the period from 1960 to 2002.

5.6.1 Does Money Seal The Deal?

When applying the Cox model the negative effect of *per capita income* is significant at the 1 and 5 percent level. The effect increases as we shift from the World Bank's to Maddison's data. When controlling for regime type there is also an increase in the size and significance of the effect. The effect and significance is at its greatest when including all control variables in model 8. However, when changing to the Conditional Elapsed Time Model, the size of the effect increases, while the results become less significant.

Table 5-2

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*
Per Capita Income	-0.458*	-0.584**	-0.643*	-0.607**	-0.622**	-0.706**	-0.705**	-0.955**	-0.791	-0.922*	-1.059
	(-2.34)	(-2.58)	(-2.49)	(-2.71)	(-2.70)	(-2.82)	(-2.61)	(-2.91)	(-1.83)	(-2.15)	(-1.94)
Economic growth	-1.553	-1.347	-0.934	-2.549	-2.638	-2.543	-1.621	-1.775	-3.571	-2.304	0.302
	(-0.66)	(-0.52)	(-0.33)	(-1.34)	(-1.35)	(-1.26)	(-0.73)	(-0.92)	(-0.55)	(-0.38)	(0.06)
GDP Change		0.642	0.383		0.185	0.124	0.221	0.462		-0.838	-0.845
During War		(0.93)	(0.50)		(0.29)	(0.18)	(0.28)	(0.52)		(-0.80)	(-0.52)
GDP Change Missing		-0.597	-0.184								
		(-0.93)	(-0.28)								
No UN PKO			-0.740			-0.286		-0.137		-1.914	-1.837
			(-0.58)			(-0.25)		(-0.10)		(-0.99)	(-0.67)
UN Expenditures			-0.295			-0.065		0.128		-0.256	-0.094
			(-1.01)			(-0.27)		(0.40)		(-0.51)	(-0.13)
UN Missing			0.831			0.907		1.048		1.247	1.261
			(0.50)			(0.60)		(0.60)		(0.60)	(0.44)
Population			0.0308			0.001		-0.0317		0.092	0.071
			(0.18)			(0.01)		(-0.20)		(0.31)	(0.17)
Population Missing			-43.14			-44.36		-45.23		-39.04***	-46.15
			(-0.00)			(.)+		(.)+		(-11.72)	(.)+
Neighbor at War			0.155			-0.088		-0.193		-0.124	-0.550
			(0.35)			(-0.23)		(-0.45)		(-0.22)	(-0.74)
Neighbor Missing			-0.341			-0.448		-1.012		-0.385	-1.073
			(.)+			(.)+		(.)+		(-0.41)	(.)+
Political Regime							-0.00001*	-0.00001			-0.0011
							(-1.98)	(-1.63)			(-1.67)
Regime Missing							-0.175	0.993			2.032*
							(-0.16)	(0.90)			(2.54)
Log Likelihood	-85.42	-84.56	-81.83	-118.9	-118.8	-117.28	-93.2	-90.9			
N	937	937	937	940	940	940	760	760	940	940	760

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ + Indicates that missing values are too few to generate t-values. Log Likelihood is not available when clustering and therefore not reported in model 9, 10 and 11.

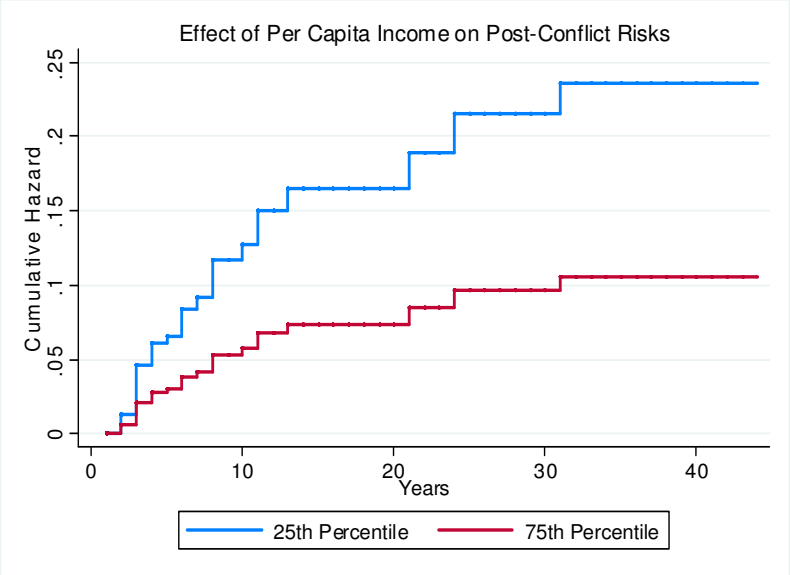
In model 10 the effect is significant at the 5 percent level. In model 9 and 11, the significance level is reduced to the 10 percent level. As the level of significance is close to 5,[57] I argue that the analysis supports the thesis that there exists a negative relationship between *per capita income and post-conflict risk.*

The analysis indicates, as is argued in Breaking The Conflict Trap (Collier *et al.* 2003), that poor countries are not only more likely to experience a civil war in the first place, but when war finally comes to an end, peace is also more likely to collapse. Thus risk reducing efforts should be inversely proportional to the level of income. One disadvantage with using the Cox Model is that it does not include information about when events occur, only the ordering of events (Cleves *et al.* 2008: 145). Consequentially the Cox model is not able to predict when events are likely to occur, nor the risk that it will. The Cox model only estimates the effect of the independent variables on the hazard rate. [58] The effect can be interpreted through the coefficients in the Table 5-2. In order to secure continuity with the rest of this analysis I use the Cox estimated model 8 in Table 5-2. A coefficient of -0.955 indicates that by increasing PPP adjusted *log per capita income* by one unit, the hazard rate decreases by 61.5 percent. I compare the distribution of per capita income, and find that the 25th and 75th percentiles correspond to $1018 and $4100, respectively.[59] Thus increasing per capita income from the 25th percentile to the 75th percentile reduces the hazard rate by 73.56 percent.[60]

The effect of per capita income is illustrated in Figure 5-1, by estimating the cumulative hazard function. The cumulative hazard function gives the estimated number of peace collapses before time *t* (Cleves *et al.* 2008: 13). The control variable *economic growth, GDP change during war, No UN PKO, UN Expenditures, Population, Neighbour at War, Political Regime* and their *Missing Dummies* are all set to their mean value. The blue and pink lines represent situations where per capita income is set at their 25th and 75th percentile, respectively. Figure 5-1 shows that for any point in time the cumulative hazard function of the 25th percentile is more than twice the one of the 75th percentile. Based on this it should be clear that everything else held constant; post-conflict risk is substantially higher in poor than in middle or high income states.

[57] More precisely, they are significant at the 5.2 and 6.7 percent level.
[58] The hazard rate gives the rate at which peace fails by *one year* given that the unit had survived until then (Box-Steffenmeiser and Jones 2004: 14)
[59] Measured in US 1990 dollars.
[60] Calculated as $\exp(-0.955)^{\ln 4100 - ln1018}$

Figure 5-1



5.6.2 Does More Money Seal The Deal?

As per capita income is negatively related to post-conflict risk, economic growth will in the long run reduce risk, by contributing to the level of per capita income. However, as post-conflict risk tends to be highest just after war has ended, the crux is often seen as getting through the first decade. Consequentially, we need to know whether economic growth by itself reduces post-conflict risk. As can be seen from Table 5-2, *my analysis does not find that economic growth reduces post-conflict risk.*

The effect is weak and insignificant in all models. In the Cox models, as expected, when moving from the World Bank's GDP data to Maddison's PPP adjusted GDP data the negative effect of economic growth becomes stronger. The effect almost doubles, and there is also a considerable increase in the t-value, -reducing the insignificance of the results. In model 4 and 5 the effect is significant at the 20 percent level. Although this is commonly regarded as an insufficient level, the level is relatively high compared to the significance level in the other models. This should demonstrate the importance of not excluding variables with missing GDP data. Often performing

some best guesses will yield more correct estimates. However, when shifting from the Cox to the Conditional Elapsed Time Model, the level of significance is once again reduced.

Apart from controlling for *regime type*, controlling for the other independent variables does not affect the effect of economic growth to large degree.[61] When moving from model 6 to 7, and 10 to 11, and introducing regime type, the effect of economic growth becomes considerably weaker. More strikingly, in model 11 it changes direction, suggesting a positive relationship between economic growth and post-conflict risk. This might be due to the time frame of the analysis being limited to 1960-2000. However, when running the analysis on these years, and not including *regime type*, results are by and large the same as in model 6 and 10. In order to test whether there is an interaction effect between political regime type and economic growth I divide the continuous variable *regime type* into three categories and create interaction variables. When running this model results are highly insignificant. *In contrast to what is often assumed this analysis does not support the hypothesis that there is a significant relationship between economic growth and post-conflict risk.*

5.6.3 Why Are results insignificant?

The absence of a significant negative relationship between economic growth and post-conflict risk has three potential sources. Firstly, it might be that there is no link between economic growth and post-conflict risk. If so is the case, there are no reasons not to provide economic growth. However, one should be aware that as a risk reducing method in the short run, it is not efficient. Secondly, it might be due to disturbances in the data-material. Both battle-deaths and economic growth estimates are noisy and uncertain data, - probably beyond what is common in statistical analysis. The focus of this analysis has been on post-conflict countries. As civil war is predominately a problem of the poor, most of the countries in this analysis have GDP levels below average. This makes it harder to estimate the level of GDP per capita and economic growth. The certainty of the estimates will always depend on the level of bureaucracy in the specific country. As bureaucracies are likely to be less developed in poor post-conflict economies, GDP and economic growth estimates will contain higher uncertainties than it would

[61] Regime Type is the only variable generating significant results. Although significant, the effect is estimated to be too small to be substantially interesting. Moving from being a highly totalitarian regime to be a highly democratic regime only reduces post-conflict risk with 0.11 percent.

if the focus was on more developed economies. While estimating the effect of the country is difficult, estimating the change from year to year might be even harder.

A similar argument can be made about the battle-deaths data. These are estimates of the number of battle-deaths, and will always contain uncertainties. According to Strand (2006: 147-148) the number of battle-deaths might be underreported from specific parts of the world, generating systematically too low estimates. Thus a peace period might start one year too early, or end one too late. It might also be that a peace collapse is not reported because the battle-deaths estimates of the subsequent war do not accumulate to 1,000. This leads us to a possible weakness of the definition: Imagine that during the post-conflict peace there is a conflict outbreak causing 900 battle-deaths. As the number of battle-deaths does not accumulate to 1,000, the peace episode is not coded as collapsed. Nevertheless arguing that the peace has in fact collapsed is not unreasonable. One can claim that there is a qualitative difference between peace episodes that do not include combats and one that does. The solution might be to lower the accumulate part of the threshold criterion. As argued in section 3.1.2, if this threshold is lowered too much one risks ending up focusing on countries where the armed conflict has not been severe enough to leave the country with the typical post-conflict risks. Nevertheless one might consider reducing the cumulative part to around 500 instead of 1,000. In addition to this it may be problematic that I have mixed Lacina and Gleditsch' and PRIO-Uppsala's battle deaths data. I did so because this was the only way I could use my preferred definition with exact dates. However, this might lead to inconsistencies in the dataset. Based on this it should be clear that it is possible that post-conflict risk is significantly related to economic growth, but the effect is not detected due to noise in the data.

Thirdly, as was argued in chapter two, the effect of economic growth on post-conflict risk might go in both directions. The focus of this analysis has been on testing a correlation expected to go in a specific direction, not on testing a theory. One advantage of using testable theories is that plausible mechanisms are identified, and based on these indicators, possibly less rough than economic growth, are developed. If economic growth decreases post-conflict risk by reducing *rebel organization's income opportunities*¸ *increasing potential soldiers' opportunity costs* and *state's intelligence,* but also increases post-conflict risk through the *size of the possible reward*, we need indicators that can differentiate between these effects. This can lead to increased insight

into what determines post-conflict risk, and hopefully better policy advices in order how to reduce risk. In order to get a more nuanced picture of the effect of economic growth on post-conflict risk it is perhaps an idea to do as Morton (1999) suggests; namely to go back to the *theoretical drawing board*, and develop testable theories

5.7 CONCLUSION

In order to analyse the relationship between *per capita income* and *economic growth,* and *post-conflict risk*, I have changed to what I consider to be a more valid definition of post-conflict peace. To avoid biasness caused by missing data I have run the analysis using Maddison's PPP adjusted GDP data. In order to account for repeated events; in the three lasts models I run the analysis using the Conditional Elapsed Time Model. Doing this I find that post-conflict risk is substantially lower in poor than in middle or high income states. The finding supports the third assumption in the Conflict Trap; (1) poor countries are more likely to experience civil war outbreak, (2) civil war increases poverty and (3) *which again makes poor countries more likely to experience a new civil war.* Accordingly risk reducing efforts should be inversely proportional to the level of per capita income.

My analysis does not support that economic growth reduces post-conflict risk. Of course in the long run it reduces risk by contributing to the level of per capita income. However, in the short run, when risk is highest; economic growth is not shown to have a significant impact on post-conflict risk. The lack of a significant relationship has three possible explanations: (1) there is no link between economic growth and post-conflict risk. If so is the case, there are no reasons not to provide economic growth. However, one should be aware that as a risk reducing method in the short run, it is not efficient. (2) Economic growth reduces post-conflict risk, but noise in the data makes us unable to capture the effect. Or (3) as was argued in chapter 2, economic growth might work through a whole string of mechanisms, that both increase and decrease post-conflict risk. In order to get a more nuanced picture of how economic growth affects post-conflict risk I argue that we need to develop testable theories.

6 CONCLUSION

In 1972 and 1973 the civil wars in Chad and Chile ended. During the 36 years that have passed since then, Chile has experienced nothing but peace. Chad on the other hand has experienced four new civil war outbreaks. Although the history of Chad is extreme, post-conflict peace collapse is not uncommon. With the acknowledgment of the fragility of the post-conflict peace, several researchers have started to focus upon post-conflict risks. The questions being asked concerns which post-conflict societies are most at risk of experiencing a peace collapse, and what can be done in order to reduce these risks. The idea that economic recovery can reduce post-conflict risk has been appreciated by researchers (see: Flores and Nooruddin 2009) as well as the president of the World Bank Robert B. Zoellick and the UN (see: Ohiorhenuan and Stewart 2008). In accordance with this Collier, Hoeffler and Söderbom (2008) find that poor countries are more likely to experience a peace collapse, and economic growth will effectively reduce risks. These findings should have releveance for policy making. Consequentially it is important to know whether the findings are robust. In order to test the robustenss I change to the ACD dabase. Doing this I find that *per capita income* is negatively related to post-conflict risks. However, my thesis does *not supprt that economic growth reduces post-conflict risks.*

6.1 THE FINDINGS

As there exists little theory on the relationship between economy and post-conflict risk, I start chapter two by outlaying the two main theories explaining civil war occurrence in poor countries; the opportunity theory and state capacity theory. I argue that the mechanisms inherent in the two theories in most situations are likely to be operable in post-conflict societies as well as pre-war societies. Both theories lead to the conclusion that post-conflict risk is expected to be higher in poor countries. The mechanisms in the opportunity theory implies that economic growth should, although it might take some time, exclusively reduce post-conflict risk. In contrast the implication of the state capacity theory is that economic growth might increase post-conflict risk in the short run by increasing the *size of the possible award.*

In chapter three I test the robustness of CHS findings to changes in the database; from COW to the Armed Conflict Database (ACD). As I want everything else to be as similar as possible I try

to apply the coding criteria that have been used in COW to the ACD database. Problem is that important parts of coding information are missing. Based on Sambanis (2004) and Gleditsch (2004) discussion on the COW dataset, I construct eight candidate datasets which I compare with CHS'. When running the analysis on the most similar dataset I find that the effect of per capita income becomes stronger, and is now significant at the 1 percent level. The effect of economic growth becomes weaker, and is now highly insignificant. Accordingly the negative effect of economic growth on post-conflict risk is not robust to changes in the database.

In chapter four I try to explain the change in the effect of economic growth. I argue that the change in the effect is most likely to have been caused by (1) differences in the other independent variables, (2) differences in the dependent variable, (3) influential observations, (4) inconsistencies between COW and CHS (5) differences regarding which conflicts are included in COW and ACD or (6) different start and end dates. I find that *inconsistencies between COW and CHS* and *differences in which conflicts are included* explain parts of the change in the effect. However the main change is caused by differences in start and end dates. The sensitivity of the result to changes in start and end dates demonstrate the importance of these being set correctly. Start and end dates depend on the definition of post-conflict peace and in most cases *battle-death estimates*. This advocates the need for a valid definition of post-conflict peace, and robustness tests.

In chapter five I continue to use the Armed Conflict Dataset, and change to what I consider to be a more valid definition of post-conflict peace. In order to better account for missingness I shift to Maddison's (2006) per capita income data. I change to the Conditional Elapsed Time model, to better account for repeated events. Doing this I find that per *capita income continues to be significant*, though only at the 10 percent level in two of the models. However, as the significance level is close to 5 I argue that my analysis to large degree supports that per capita income is negatively related to post-conflict risk. The effect of *economic growth continues to be highly insignificant, and is even positive in one of the models*. I maintain that the lack of a significant relationship between economic growth and post-conflict risk can either be due to (1) noise in the data, making it hard to capture the effect. (2) Economic growth affecting post-conflict risk in both directions. Or (3) that there does not exist a relationship between the two. In order to get a more nuanced picture of the effect of economic growth on post-conflict risk; we need to develop

a testable theory, that precisely states through which mechanisms economic growth is expected to affect post-conflict risk.

6.2 IMPLICATIONS OF MY FINDINGS

My findings indicate that economic growth does not reduce post-conflict risk in the short run. Thereagainst, the relationship between per capita income and post-conflict risk seems to be both strong and significant. Consequentially in the long run economic growth will reduce post-conflict risk by moving the economy from being a low income country to become a middle or high income country. However, when conflict has finally come to an end, post-conflict risk tends to be exceptionally high. Accordingly the main focus is not on reducing post-conflict risk in the long run, but rather on how to get through the first risky decade. The fact that my analysis does not support the existence of a significant relationship between *economic growth* and *post-conflict risks* begs two questions: Firstly, it should make us worry about whether economic growth includes some risk increasing elements. This of course does not imply that post-conflict societies should be left in poverty. However, one should ask when the appropriate time to promote economic growth is, and whether it is possible to avoid the risk increasing elements? Secondly if economic growth does not reduce post-conflict risk in the short run, we need to be aware of this and keep searching for other risk reducing methods.

The field has already come a long way with collecting data, even from separate sources. However in order to answer questions about the effect of economic growth on post-conflict risk, we need to develop testable theories. We need a theory that explicitly states through which mechanisms economic growth is expected to affect post-conflict risk. Based on these mechanisms we can develop indicators, and test these on the data. Hopefully then we can achieve a better understanding of the effect of economic growth on post-conflict risk, and thereby better policy advices.

7 APPENDIX 1

Table A-1 *CHS' results as presented in Collier et al (2008: 468-469)*

	(1)	*(2)*	*(3)*	*(4)*
Economic				
Per capita income	−0.427	−0.431	−0.423	−0.551
	(1.72)+	(1.72)+	(1.70)+	(2.01)*
Per capita income growth	−3.548	−3.716	−3.613	−4.184
	(2.21)*	(2.29)*	(2.24)*	(2.37)*
Political				
Democracy	1.230	1.194	1.224	1.515
	(2.43)*	(2.34)*	(2.42)*	(2.86)**
Democracy missing (dummy)	1.752	1.726	1.754	1.798
	(2.68)**	(2.64)**	(2.69)**	(2.74)**
Regional autonomy	−1.561	−1.619	−1.538	−1.148
	(1.43)	(1.46)	(1.41)	(0.99)
Regional autonomy missing (dummy)	−0.253	−0.253	−0.240	0.123
	(0.50)	(0.49)	(0.47)	(0.24)
Election shift	−0.709			−0.754
	(1.97)*			(2.05)*
1st election		−0.495		
		(0.65)		
Year following 1st election		0.997		
		(1.70)+		
Subsequent elections		−0.318		
		(0.42)		
Year following sub. elections		0.787		
		(1.34)		
1st election shift			−0.820	
			(1.72)+	
Subsequent elections shift			−0.593	
			(1.21)	
ln Economic freedom				−0.336
				(1.19)
Economic freedom missing (dummy)				−2.757
				(1.99)*
Social				
ln Diaspora	−0.333	−0.345	−0.337	−0.259
	(2.82)**	(2.86)**	(2.83)**	(2.10)*
Diaspora missing (dummy)	3.464	3.585	3.503	2.626
	(2.46)*	(2.51)*	(2.48)*	(1.83)+
Ethnic diversity	−1.038	−1.068	−1.035	−1.439
	(1.24)	(1.27)	(1.24)	(1.70)+
Ethnic diversity missing (dummy)	−15.198	−14.263	−14.209	−16.206
	(0.01)	(0.01)	(0.01)	(0.01)
Peacekeeping				
ln UN peacekeeping expenditure	−0.405	−0.414	−0.407	−0.478
	(2.38)*	(2.42)*	(2.40)*	(2.62)**

	(1)	*(2)*	*(3)*	*(4)*
No UN PKO	−3.714	−3.842	−3.738	−4.735
	(2.16)*	(2.21)*	(2.18)*	(2.50)*
UN data missing (dummy)	−3.886	−3.992	−3.915	−4.919
	(2.09)*	(2.13)*	(2.11)*	(2.49)*
Time				
Years 4+ of peace	−0.475	−0.464	−0.454	−0.392
	(1.12)	(1.03)	(1.06)	(0.89)
Log likelihood	−66.821	−66.539	−66.759	−63.041
Number of episodes	74	74	74	74
Number of failures	33	33	33	33

Absolute values of z− statistics in parentheses. +, * and ** indicate significance at the 10, 5 and 1 % level, respectively.

Table A-2 *The results when running CHS' do-file on their dataset*

	(1)	*(2)*	*(3)*	*(4)*
Per Capita Income	-0.392	-0.398	-0.387	-0.544*
	(-1.57)	(-1.58)	(-1.56)	(-1.97)
Economic Growth	-3.528*	-3.709*	-3.588*	-4.234*
	(-2.21)	(-2.29)	(-2.24)	(-2.39)
Democracy	1.287*	1.247*	1.281*	1.557**
	(2.51)	(2.41)	(2.49)	(2.93)
Democracy Missing	1.780**	1.750**	1.782**	1.818**
	(2.69)	(2.64)	(2.70)	(2.75)
Autonomy	-1.543	-1.614	-1.522	-1.114
	(-1.41)	(-1.45)	(-1.40)	(-0.96)
Autonomy Missing	-0.279	-0.279	-0.267	0.123
	(-0.54)	(-0.54)	(-0.52)	(0.24)
Election Shift	-0.721*			-0.763*
	(-1.98)			(-2.06)
1st election		-0.477		
		(-0.62)		
Year following 1st election		1.012		
		(1.72)		
Subsequent elections		-0.291		
		(-0.38)		
Year following sub. elections		0.832		
		(1.41)		
1st election shift			-0.824	
			(-1.72)	
Subsequent elections shift			-0.611	
			(-1.23)	
ln Economic freedom				-0.342
				(-1.21)
Economic freedom missing				-2.869*
				(-2.07)
Diaspora	-0.342**	-0.355**	-0.346**	-0.261*
	(-2.88)	(-2.92)	(-2.89)	(-2.10)
Diaspora Missing	3.497*	3.628*	3.533*	2.610
	(2.48)	(2.53)	(2.49)	(1.82)
Ethnic	-0.970	-1.007	-0.966	-1.425

	(-1.15)	(-1.19)	(-1.15)	(-1.67)
Ethnic Missing	-13.62	-13.70	-13.64	-14.78
	(-0.01)	(-0.01)	(-0.01)	(-0.01)
UN Expenditures	-0.409*	-0.419*	-0.411*	-0.486**
	(-2.42)	(-2.46)	(-2.43)	(-2.67)
No UN PKO	-3.739*	-3.877*	-3.759*	-4.840*
	(-2.19)	(-2.24)	(-2.20)	(-2.55)
UN Missing	-3.891*	-4.006*	-3.917*	-5.009*
	(-2.11)	(-2.14)	(-2.12)	(-2.54)
4+	-0.530	-0.524	-0.511	-0.413
	(-1.25)	(-1.17)	(-1.19)	(-0.94)
Constant	-6.092*	-6.103*	-6.145*	-1.422
	(-2.11)	(-2.09)	(-2.12)	(-0.42)
N	825	825	825	825

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A-3 *The Effect of Transforming Polity to 3 Categories*

	(1)	*(2)*	*(3)*	*(4)*
Per Capita Income	-0.279	-0.290	-0.277	-0.408
	(-1.19)	(-1.22)	(-1.18)	(-1.57)
Economic Growth	-4.182**	-4.366**	-4.253**	-4.600**
	(-2.78)	(-2.86)	(-2.80)	(-2.73)
Democracy	0.778	0.718	0.774	1.129
	(1.32)	(1.21)	(1.32)	(1.84)
Democracy Missing	0.891	0.847	0.891	1.111*
	(1.87)	(1.76)	(1.86)	(2.25)
Autonomy	-1.557	-1.629	-1.547	-0.986
	(-1.44)	(-1.49)	(-1.43)	(-0.87)
Autonomy Missing	-0.397	-0.397	-0.380	0.0202
	(-0.79)	(-0.78)	(-0.75)	(0.04)
Election Shift	-0.705*			-0.734*
	(-1.96)			(-2.02)
1st Election		-0.396		
		(-0.52)		
Year following 1st election		1.064		
		(1.83)		
Subsequent elections		-0.276		
		(-0.37)		
Year following sub. elections		0.797		
		(1.35)		
1st election shift			-0.824	
			(-1.72)	
Year following 1st election			-0.580	
			(-1.18)	
ln Economic freedom				-0.314
				(-1.16)
Economic Freedom Missing				-2.705*
				(-2.06)
Diaspora	-0.323**	-0.336**	-0.326**	-0.252*
	(-2.71)	(-2.77)	(-2.72)	(-2.00)
Diaspora Missing	3.519*	3.636*	3.548*	2.762
	(2.46)	(2.50)	(2.47)	(1.88)
Ethnic Diversity	-0.522	-0.548	-0.518	-0.940
	(-0.67)	(-0.70)	(-0.67)	(-1.20)
Ethnic Missing	-13.59	-13.99	-13.57	-14.32
	(-0.01)	(-0.01)	(-0.01)	(-0.01)
UN Expenditures	-0.355*	-0.368*	-0.357*	-0.410*
	(-2.01)	(-2.06)	(-2.02)	(-2.16)

No UN PKO	-3.339	-3.495	-3.353	-4.227*
	(-1.86)	(-1.93)	(-1.87)	(-2.16)
UN Missing	-3.825*	-3.943*	-3.845*	-4.636*
	(-1.98)	(-2.02)	(-1.99)	(-2.26)
4+	-0.592	-0.576	-0.572	-0.529
	(-1.43)	(-1.31)	(-1.37)	(-1.24)
Constant	-6.771*	-6.756*	-6.820*	-2.792
	(-2.33)	(-2.30)	(-2.35)	(-0.86)
N	825	825	825	825

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A-4 *Column 1 and 4 when election and autonomy variables are excluded*

	(1)	*(4)*
Per Capita Income	-0.340	-0.511
	(-1.48)	(-1.91)
Economic Growth	-3.246*	-3.640*
	(-2.08)	(-2.08)
Democracy	1.349**	1.534**
	(2.72)	(3.06)
Democracy Missing	1.737**	1.723**
	(2.73)	(2.68)
Diaspora	-0.382**	-0.264*
	(-3.17)	(-2.12)
Diaspora Missing	3.653*	2.587
	(2.53)	(1.78)
Ethnic Diversity	-0.855	-1.342
	(-1.00)	(-1.58)
Ethnic Missing	-13.80	-15.05
	(-0.01)	(-0.01)
No UN PKO	-3.142	-4.386*
	(-1.78)	(-2.35)
UN Expenditures	-0.357*	-0.441*
	(-2.02)	(-2.43)
UN Missing	-3.074	-4.372*
	(-1.64)	(-2.27)
4+	-0.528	-0.333
	(-1.31)	(-0.80)
Economic Freedom		-0.323
		(-1.17)
Freedom Missing		-2.869*
		(-2.14)
4+	-0.528	-0.333
	(-1.31)	(-0.80)
Constant	-7.650**	-2.255
	(-2.86)	(-0.70)
N	825	825

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A-5 *The Conflicts I have Coded as the Same*

Country	Dataset	ACD ID	Description in Gleditsch (2004)	Mutual ID	War starts	War Ends
Dominican Republic	COW		Dominican Republic vs. Leftists	1	1965	1965
Dominican Republic	ACD	93		1	1965	1965
Guatemala	COW		Guatemala vs. Leftists of 1978	2	1978	1984
Guatemala	COW		Guatemala vs. Leftists of 1970	2	1970	1971
Guatemala	ACD	36		2	1990	1992
Guatemala	ACD	36		2	1968	1988
El Salvador	COW		El Salvador vs. Salvadorean Democratic Front	3	1979	1992
El Salvador	ACD	120		3	1981	1991
Nicaragua	COW		Nicaragua vs. Sandinistas	4	1978	1979
Nicaragua	COW		Nicaragua vs. Contras	4	1982	1990
Nicaragua	ACD	140		4	1983	1988
Nicaragua	ACD	140		4	1978	1979
Colombia	COW		Colombia vs. M-19/Farc & Drug Lords	5	1984	1993
Colombia	COW		Colombia vs. M-19/Farc & Drug Lords	5	1998	2002
Colombia	ACD	92		5	1985	2002
Peru	COW		Peru vs. Shining Path	6	1982	1995
Peru	ACD	95		6	1981	1993
Chile	COW		Chile vs. Pinochet Led Rebels	7	1973	1973
Chile	ACD	125		7	1973	1973
Yugoslavia (Serbia)	COW		Yugoslavia/Serbia vs. Croatians	8	1991	1992
Yugoslavia (Serbia)	ACD	190		8	1991	1991
Yugoslavia (Serbia)	COW		Yugoslavia (Kosovo)	9	1998	1999
Yugoslavia (Serbia)	ACD	218		9	1998	1999
Bosnia and Herzegovina	COW		Bosnia/Herzegovina vs. Serbs	10	1991	1995

Bosnia and Herzegovina	ACD	194		10	1992	1995
Russia	COW		Russia vs. Chechens	11	1998	2002
Russia	COW		Russia vs. Chechens	11	1994	1996
Russia	ACD	206		11	1994	1996
Russia	ACD	206		11	1999	2002
Georgia	COW		Georgia vs. Gamsakurdia & Abkaz	12	1991	1994
Georgia	ACD	197		12	1992	1993
Azerbaijan	COW		Azerbaijan vs. Nagorno-Karabakh	13	1991	1994
Azerbaijan	ACD	193		13	1992	1994
Guinea Bissau	COW		Guinea-Bissãu (1998)	14	1998	1998
Guinea Bissau	ACD	216		14	1998	1999
Liberia	COW		Liberia vs. NPFL & ULIMO	15	1992	1995
Liberia	COW		Liberia vs. Anti-Doe Rebels	15	1989	1990
Liberia	COW		Liberia vs. National Patriotic Forces	15	1996	1996
Liberia	ACD	146		15	2002	2002
Liberia	ACD	146		15	1990	1995
Sierra Leone	COW		Sierra Leone vs. RUF	16	1991	1996
Sierra Leone	COW		Sierra-Leone (1998-2000)	16	1998	2000
Sierra Leone	ACD	187		16	1994	1996
Sierra Leone	ACD	187		16	1998	1999
Cameroon	ACD	158		17	1960	1960
Cameroon	COW		Cameroon (1959-1961)	17	1960	1961
Nigeria	COW		Nigeria vs. Biafrans	18	1967	1970
Nigeria	ACD	107		18	1967	1970
Congo	COW		Congo vs. Denis Sassou Nguemo	19	1997	1999
Congo	ACD	214		19	1997	1999

Uganda	COW		Uganda vs. National Resistance Army	20	1980	1988
Uganda	ACD	118		20	1978	1991
Uganda	ACD	118		20	1998	2002
Burundi	COW		Burundi vs. Hutu of 1993	21	1993	1998
Burundi	COW		Burundi vs. Hutu of 1993	21	2000	2002
Burundi	COW		Burundi vs. Tutsi Supremacists	21	1991	1992
Burundi	ACD	90		21	1997	2002
Burundi	ACD	90		21	1991	1992
Rwanda	COW		Rwanda (2001)	22	2001	2001
Rwanda	COW		Rwanda vs. Patriotic Front	23	1994	1994
Rwanda	COW		Rwanda (1998)	23	1998	1998
Rwanda	COW		Rwanda vs. Tutsi	23	1990	1993
Rwanda	ACD	179		23	1990	1994
Rwanda	ACD	179		23	1997	2001
Somalia	COW		Somalia vs. Clan Factions	24	1982	1997
Somalia	ACD	141		24	1988	1996
Ethiopia	COW		Ethiopia vs. Tigrean Liberation Front	25	1978	1991
Ethiopia	ACD	70		25	1976	1991
Ethiopia	COW		Ethiopia vs. Eritrean Rebels	26	1974	1991
Ethiopia	ACD	78		26	1974	1991
Angola	COW		Angola vs. UNITA of 1975	27	1975	1991
Angola	COW		Angola vs. UNITA of 1992	27	1998	2001
Angola	COW		Angola vs. UNITA of 1992	27	1992	1994
Angola	ACD	131		27	1998	2001
Angola	ACD	131		27	1975	1995
Mozambique	COW		Mozambique vs. Renamo	28	1979	1992

Mozambique	ACD	136		28	1981	1992
Zimbabwe	COW		Zimbabwe vs. Patriotic Front	29	1972	1979
Zimbabwe	ACD	122		29	1976	1979
South Africa	COW		Namibian	30	1975	1988
South Africa	ACD	101		30	1979	1988
South Africa	COW		South Africa (1989-1993)	31	1989	1993
South Africa	ACD	150		31	1985	1988
Morocco	COW		Western Sahara	32	1975	1983
Morocco	ACD	135		32	1976	1987
Algeria	COW		Algeria vs. Islamic Rebels	33	1992	2000
Algeria	ACD	191		33	1992	2001
Sudan	COW		Sudan vs. SPLA-Garang Faction	34	1995	2002
Sudan	COW		Sudan vs. SPLA-Garang Faction	34	1983	1992
Sudan	COW		Sudan vs. Anya Nya	34	1963	1972
Sudan	ACD	85		34	1963	1972
Iran	COW		Iran vs. Anti-Shah Coalition	35	1978	1979
Iran	ACD	144		35	1979	1980
Iran	ACD	143		36	1979	1982
Iran	ACD	143		36	1986	1988
Iran	COW		Iran vs. Mujaheddin	36	1981	1982
Turkey	COW		Turkey vs. Kurds	37	1991	2002
Turkey	ACD	159		37	1988	1999
Iraq	COW		Iraq vs. KDP Kurds	38	1996	1996
Iraq	COW		Iraq vs. Kurds of 1974	38	1974	1975
Iraq	COW		Iraq vs. Kurds & Shiites	38	1985	1993
Iraq	COW		Iraq vs. Kurds of 1961	39	1961	1963

Iraq	ACD	74		39	1996	1996
Iraq	ACD	74		39	1961	1970
Iraq	ACD	74		39	1973	1991
Lebanon	COW		Lebanon vs. Leftists of 1975	40	1975	1990
Lebanon	ACD	63		40	1989	1990
Lebanon	ACD	63		40	1983	1984
Lebanon	ACD	63		40	1976	1976
Afghanistan	COW		Afghanistan vs. Mujahedin	41	1978	2001
Afghanistan	ACD	137		41	1978	2001
Tadsjikistan	COW		Tadzhikistan vs. Popular Democratic Army	42	1992	1997
Tadsjikistan	ACD	200		42	1992	1995
India	COW		India vs. Sikhs & Kashmiris	43	1999	2002
India	COW		India vs. Sikhs & Kashmiris	43	1985	1993
India	ACD	156		43	1984	1984
India	ACD	156		43	1986	1993
India	ACD	169		43	1990	2002
Pakistan	COW		Pakistan vs. Bengalis	44	1971	1971
Pakistan	ACD	116		44	1971	1971
Pakistan	COW		Pakistan vs. Baluchi Rebels	45	1973	1977
Pakistan	ACD	129		45	1974	1977
Pakistan	COW		Pakistan vs. Mohajir	46	1994	1995
Pakistan	ACD	209		46	1995	1996
Sri Lanka	COW		Sri Lanka (Tamils and JVP)	48	1995	2001
Sri Lanka	COW		Sri Lanka (Tamils and JVP)	48	1983	1986
Sri Lanka	COW		Sri Lanka vs. Janatha Vimukthi-JVP	48	1971	1971
Sri Lanka (Ceylon)	ACD	117		48	1971	1971

Sri Lanka (Ceylon)	ACD	117		48	1989	1989
Sri Lanka (Ceylon)	ACD	157		48	1984	2001
Thailand	COW		Thailand vs. Communists	49	1970	1973
Thailand	ACD	43		49	1976	1980
Cambodia	COW		Cambodia vs. Khmer Rouge of 1978	50	1978	1991
Cambodia	COW		Cambodia vs. Khmer Rouge of 1993	50	1993	1997
Cambodia	COW		Cambodia vs. Khmer Rouge of 1970	50	1970	1975
Cambodia	ACD	103		50	1967	1975
Cambodia	ACD	103		50	1978	1998
Laos	COW		Laos vs. Pathet Lao of 1963	51	1963	1973
Laos	COW		Laos vs. Pathet Lao of 1960	51	1960	1962
Laos	ACD	65		51	1963	1973
Laos	ACD	65		51	1960	1961
Laos	ACD	65		51	1989	1990
Republic of Vietnam	COW		Republic of Vietnam vs. NLF	52	1960	1965
Republic of Vietnam	ACD	52		52	1960	1964
Philippines	COW		Philippines vs. NPA	53	1972	1992
Philippines	ACD	10		53	1981	1989
Philippines	ACD	10		53	1991	1993
Philippines	COW		Philippines vs. Moros	54	1972	1980
Philippines	COW		Philippines vs. Moros	54	2000	2001
Philippines	ACD	112		54	1970	1990
Philippines	ACD	112		54	1993	1993
Philippines	ACD	112		54	2000	2002
Indonesia	COW		Indonesia vs. Leftists	55	1956	1960
Indonesia	ACD	46		55	1960	1961

Indonesia	COW		East Timor (Fretilin)	56	1975	1977
Indonesia	ACD	134		56	1975	1978

8 APPENDIX 2

/ THE DO-FILE/
***/Main do-file*/**

```
*/Chapter 1*/
*/What happens when I run the CHS analysis with their do-file*/
clear all
use "M:\Master\Replicating CHS\CHS1.dta", clear
save "M:\Master\Replicating CHS\CHS.dta", replace
run "M:\Master\Replicating CHS\CHS do-fil.do"

*/How does converting the polity-variable to a three-category variable affect
the results?*/
*/I adjust the polity variable to three categories and merge it into CHS*/
run "M:\Master\Replicating CHS\CHS resultatene med polity-3kategori.do"

*/Chapter 3*/
*/comparing battle-deaths*/
run "M:\Master\Battledeaths\comparing battle-deaths.do"

*/I compare the four datasets with CHS*/
run "M:\Master\Sammenlikne data\sammenlikne datasettene1.do"

*/I run the analysis with criterion 4-bdeadhigh*/
run "M:\Master\Replicating CHS\Analyse kriterie4-bdeadhig.do"

*/Chapter 4*/
*/does excluding the other (not GDP-related) independent variables affect the
results*/
run "M:\Master\Sammenlikne data\Drop independent variables.do"

*/From dates till year*/
run "M:\Master\Sammenlikne data\From dates till years.do"

*/does excluding influential observations affect the results?*/
run "M:\Master\Sammenlikne data\influential observations.do"

*/removing discrepancies between CHS and COW*/
run "M:\Master\Replicating CHS\removing mistakes.do"

*/do the effects differ when only including conflicts that apear in both
datasets?*/
*/with COW's start and end dates*/
run "M:\Master\Cummulative\COW\post-conflict felles COW500.do"
*/with ACD criterion 4 start and end dates*/
run "M:\Master\Cummulative\ACD\post-conflict ACD.do"

*/including the excluded groups*/
run "M:\Master\Cummulative\Excluding COWwars\including the excluded.do"

*/checking the mean*/
run "M:\Master\Cummulative\mean.do"

*/comparing warduration*/
```

```
run "M:\Master\Sammenlikne data\Comparing warduration.do"

*/comparing the conflicts that appear in both datasets*/
run "M:\Master\Tabell\warduration-enhet stat.do"

*/Chapter 5*/
*/I change the cummulative criterion to be 1000 battle-deaths during the span
of the conflict, but 25 per year. Then I can use the date variables*/
run "M:\Master\My own analysis\med datovariabler.do"
```

***/CHS do-file: M:\Master\Replicating CHS\CHS do-fil.do*/**

```
stset pdur, id(warnumb) f(pcens)
save, replace
adopath + "M:\Stata"

*/column 1*/
eststo: streg lpcgdp_2 dy_1  poldum p_m auton auton_m ebox ldiaspc diaspc_m
ethnic ethnic_m lexpend absent no_un_data d2, nohr dist(exponential)

*/column 2*/
eststo: streg lpcgdp_2 dy_1  poldum p_m auton auton_m E1st E1st_1 E2etc
E2etc_1 ldiaspc diaspc_m ethnic ethnic_m lexpend absent no_un_data d2, nohr
dist(exponential)

*/column 3*/
eststo: streg lpcgdp_2 dy_1  poldum p_m auton auton_m ebox1st ebox2etc ldiaspc
diaspc_m ethnic ethnic_m lexpend absent no_un_data d2, nohr dist(exponential)


/* ref model with efw added: column 4 */
eststo: streg lpcgdp_2 dy_1  poldum p_m auton auton_m ebox Iefw Iefw_m ldiaspc
diaspc_m ethnic ethnic_m lexpend absent no_un_data d2, nohr dist(exponential)
esttab
esttab using "M:\Master\Replicating CHS\replisere CHS med Stata11.rtf",
replace
```

***/CHS results w/ a 3 cathegorical polity variable:*/CHS resultatene med polity-3kategori.do"*/**

```
*/I convert CHS polity variable into three cathegories*/
clear all
use "M:\Master\Replicating CHS\CHS.dta", clear
adopath + "M:\Stata"

*/ I merge in the polity data,- to do that I need a primkey*/
run "M:\Master\Nøkler\name til gwno.do"
capture drop primkey
gen primkey=(gwno*10000)+year
sort primkey
save, replace

merge primkey using "M:\Master\Uavhengige variabler\Polity.dta", keep
(politytot polityaut politydem polity polity2) _merge (politymerge)
tab politymerge
drop if politymerge==2
drop politymerge
```

```
*/I run the analysis, but use polityaut and politydem instead of using their
polity variable*/
*/ column 1*/
eststo: streg lpcgdp_2 dy_1  politydem polityaut auton auton_m ebox ldiaspc
diaspc_m ethnic ethnic_m lexpend absent no_un_data d2, nohr dist(exponential)

/* column 2 */
eststo: streg lpcgdp_2 dy_1  politydem polityaut auton auton_m E1st E1st_1
E2etc E2etc_1 ldiaspc diaspc_m ethnic ethnic_m lexpend absent no_un_data d2,
nohr dist(exponential)

/* column 3 */
eststo: streg lpcgdp_2 dy_1  politydem polityaut auton auton_m ebox1st
ebox2etc ldiaspc diaspc_m ethnic ethnic_m lexpend absent no_un_data d2, nohr
dist(exponential)

/* ref model with efw added: column 4 */
eststo: streg lpcgdp_2 dy_1  politydem polityaut auton auton_m ebox Iefw
Iefw_m ldiaspc diaspc_m ethnic ethnic_m lexpend absent no_un_data d2, nohr
dist(exponential)
esttab
esttab using "M:\Master\Replicating CHS\changingthepolityvar.rtf", replace
save, replace

*/Lacina & Gle. vs. ACD: "M:\Master\Battledeaths\comparing battle-deaths.do"*/
*/I open Lacina and Gleditsch' data*/
use "M:\Master\Battledeaths\Battledeaths.dta", clear
keep if type>=3
sort idprimkey
save, replace

*/I open Uppsala-Prio's*/
use "M:\Master\Battledeaths\UCD-Prios battle-deaths.dta", clear
gen idprimkey=(conflictid*10000)+year
sort idprimkey
merge idprimkey using "M:\Master\Battledeaths\Battledeaths.dta", keep(
bdeadhig bdeadbes bdeadlow)
tab _merge
keep if _merge==3
drop _merge

*/how much do they correlate?*/
corr  bdlow bdeadlow
corr bdbest bdeadbes
corr  bdhigh bdeadhig

reg  bdlow bdeadlow
reg bdbest bdeadbes
reg  bdhigh bdeadhig
clear all

*/ I construct and compare the 8 candidate datasets with CHS:
"M:\Master\Sammenlikne data\sammenlikne datasettene1.do"*/
*/constructing the datasets*/
```

```
run "M:\Master\Replicating CHS\Kriterie 1.do"
run "M:\Master\Replicating CHS\Kriterie 2.do"
run "M:\Master\Replicating CHS\Kriterie 3, bdeadlow.do"
run "M:\Master\Replicating CHS\Kriterie 3, bdeadbest.do"
run "M:\Master\Replicating CHS\kriterie 3, bdeadhig.do"
run "M:\Master\Replicating CHS\Kriterie 4 bdeadlow.do"
run "M:\Master\Replicating CHS\Kriterie 4, bdeadbest.do"
run "M:\Master\Replicating CHS\criterie 4, bdeadhig.do"

use "M:\Master\Replicating CHS\CHS.dta", clear
codebook gwno
codebook warnumb
sort primkey
tab pcens
save, replace

*/I test how the country years match with CHS'*/
*/criterion 1*/
use "M:\Master\Replicating CHS\Kriterie 1, del 2.dta", clear
codebook gwno
codebook pcperiod
sort primkey
merge primkey using "M:\Master\Replicating CHS\CHS.dta", _merge (gwnoymerge)
tab gwnoymerge
tab peacefailed

*/criterion 2*/
use "M:\Master\Replicating CHS\Kriterie 2, del 2.dta", clear
codebook gwno
codebook pcperiod
sort primkey
merge primkey using "M:\Master\Replicating CHS\CHS.dta", _merge (gwnoymerge)
tab gwnoymerge
tab peacefailed


*/criterion 3 bdeadlow*/
use "M:\Master\Replicating CHS\Kriterie 3, bdeadlow_del2.dta", clear
codebook gwno
codebook pcperiod
sort primkey
merge primkey using "M:\Master\Replicating CHS\CHS.dta", _merge (gwnoymerge)
tab gwnoymerge
tab peacefailed

*/criterion3 bdeadbes*/
use "M:\Master\Replicating CHS\Kriterie 3, bdeadbest_del2.dta", clear
codebook gwno
codebook pcperiod
sort primkey
merge primkey using "M:\Master\Replicating CHS\CHS.dta", _merge (gwnoymerge)
tab gwnoymerge
tab peacefailed

*/criterion 3 bdeadhig*/
use "M:\Master\Replicating CHS\Kriterie 3, bdeadhig del2.dta", clear
codebook gwno
```

```
codebook pcperiod
sort primkey
merge primkey using "M:\Master\Replicating CHS\CHS.dta", _merge (gwnoymerge)
tab gwnoymerge
tab peacefailed

*/criterion 4 bdeadlow*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadlow_del2.dta", clear
codebook gwno
codebook pcperiod
sort primkey
merge primkey using "M:\Master\Replicating CHS\CHS.dta", _merge (gwnoymerge)
tab gwnoymerge
tab peacefailed

*/criterion 4 bdeadbest*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadbest_del2.dta", clear
codebook gwno
codebook pcperiod
sort primkey
merge primkey using "M:\Master\Replicating CHS\CHS.dta", _merge (gwnoymerge)
tab gwnoymerge
tab peacefailed

*/criterion 4 bdeadhigh*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadhig del2.dta", clear
codebook gwno
codebook pcperiod
sort primkey
merge primkey using "M:\Master\Replicating CHS\CHS.dta", _merge (gwnoymerge)
tab gwnoymerge
tab peacefailed
clear all

*/To test how many of states are the same I prefer having one obs pr state*/
use "M:\Master\Replicating CHS\CHS.dta", clear
save  "M:\Master\Replicating  CHS\gwno-match\CHS-kun  en  obs  hvert  år.dta",
replace
sort gwno
by gwno: gen n=_n
drop if n>1
sort gwno
save, replace

*/criterion 1*/
use "M:\Master\Replicating CHS\Kriterie 1, del 2.dta", clear
save "M:\Master\Replicating CHS\gwno-match\Kriterie1.dta", replace
sort gwno
by gwno: gen n=_n
drop if n>1
sort gwno
merge gwno using "M:\Master\Replicating CHS\gwno-match\CHS-kun en obs hvert
år.dta", _merge (gwnomerge)
tab gwnomerge

*/criterion 2*/
use "M:\Master\Replicating CHS\Kriterie 2, del 2.dta", clear
```

```
save "M:\Master\Replicating CHS\gwno-match\Kriterie 2.dta", replace
sort gwno
by gwno: gen n=_n
drop if n>1
sort gwno
merge gwno using "M:\Master\Replicating CHS\gwno-match\CHS-kun en obs hvert
år.dta", _merge (gwnomerge)
tab gwnomerge

*/criterion 3bdeadlow*/
use "M:\Master\Replicating CHS\Kriterie 3, bdeadlow_del2.dta", clear
sort gwno
by gwno: gen n=_n
drop if n>1
sort gwno
merge gwno using "M:\Master\Replicating CHS\gwno-match\CHS-kun en obs hvert
år.dta", _merge (gwnomerge)
tab gwnomerge

*/criterion 3 bdeadbes*/
use "M:\Master\Replicating CHS\Kriterie 3, bdeadbest_del2.dta", clear
save "M:\Master\Replicating CHS\gwno-match\kriterie 3-best.dta", replace
sort gwno
by gwno: gen n=_n
drop if n>1
sort gwno
merge gwno using "M:\Master\Replicating CHS\gwno-match\CHS-kun en obs hvert
år.dta", _merge (gwnomerge)
tab gwnomerge

*/criterion 3 bdeadhig*/
use "M:\Master\Replicating CHS\Kriterie 3, bdeadhig del2.dta", clear
save "M:\Master\Replicating CHS\gwno-match\kriterie 3-high.dta", replace
sort gwno
by gwno: gen n=_n
drop if n>1
sort gwno
merge gwno using "M:\Master\Replicating CHS\gwno-match\CHS-kun en obs hvert
år.dta", _merge (gwnomerge)
tab gwnomerge

*/criterion 4 bdeadlow*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadlow_del2.dta", clear
sort gwno
by gwno: gen n=_n
drop if n>1
sort gwno
merge gwno using "M:\Master\Replicating CHS\gwno-match\CHS-kun en obs hvert
år.dta", _merge (gwnomerge)
tab gwnomerge

*/criterion 4 bdeadbest*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadbest_del2.dta", clear
sort gwno
by gwno: gen n=_n
drop if n>1
sort gwno
```

```
merge gwno using "M:\Master\Replicating CHS\gwno-match\CHS-kun en obs hvert
år.dta", _merge (gwnomerge)
tab gwnomerge

*/criterion 4 bdeadhigh*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadhig del2.dta", clear
sort gwno
by gwno: gen n=_n
drop if n>1
sort gwno
merge gwno using "M:\Master\Replicating CHS\gwno-match\CHS-kun en obs hvert
år.dta", _merge (gwnomerge)
tab gwnomerge
clear all

*/criterion 1*:"M:\Master\Replicating CHS\Kriterie 1.do"*/
insheet using "M:\Master\Sources\MainConflictTable.csv", clear
save "M:\Master\Replicating CHS\Kriterie 1.dta", replace
run "M:\Master\Replicating CHS\del 1 fokus stat.do"

*/Only the conflict years that scores 2 on the intensity variable are of
interest*/
keep if intensity==2

*/Del 2*/
sort primkey
by primkey: gen dobbel=_n
drop if dobbel>1
drop dobbel
run "M:\Master\Replicating CHS\del 2, kriterie 1.do"
save, replace

*/Del 3*/
*/I expand the dataset; each post-conflict year has one obs*/
save "M:\Master\Replicating CHS\Kriterie 1, del 2.dta", replace
sort gwno
drop n
by gwno: gen n=_n
drop if n>1
drop n

keep  gwno year
expandcl 43, cluster(gwno) gen(hva)
sort gwno
by gwno: gen n=_n
replace n=n-1
replace year=year+n
drop if year>2002
gen primkey=(gwno*10000)+year
drop n hva
sort primkey
save, replace

merge primkey using "M:\Master\Replicating CHS\Kriterie 1.dta", keep (location
firstwaryear lastwaryear peacends  peacecensored warperiod) _merge(warmerge)
tab warmerge
drop warmerge
```

```
save, replace

*/fill in the gaps*/
run "M:\Master\Replicating CHS\Del 4, fokus stat.do"
save, replace

**/Criterion 2: "M:\Master\Replicating CHS\Kriterie 2.do"*/**
insheet using "M:\Master\Sources\MainConflictTable.csv", clear
save "M:\Master\Replicating CHS\Kriterie 2.dta", replace
run "M:\Master\Replicating CHS\del 1 fokus stat.do"

*/Only the conflict years that scores 2 on the intensity variable are of
interest*/
keep if intensity==2

run "M:\Master\Replicating CHS\del 2, kriterie 2.do"
save, replace

*/Del 3*/
*/I expand the dataset; each post-conflict year has one obs*/
save "M:\Master\Replicating CHS\Kriterie 2, del 2.dta", replace
sort gwno
drop n
by gwno: gen n=_n
drop if n>1
drop n

keep  gwno year
expandcl 43, cluster(gwno) gen(hva)
sort gwno
by gwno: gen n=_n
replace n=n-1
replace year=year+n
drop if year>2002
gen primkey=(gwno*10000)+year
drop n hva
sort primkey
save, replace

merge primkey using "M:\Master\Replicating CHS\Kriterie 2.dta", keep (location
firstwaryear lastwaryear peacends  peacecensored warperiod) _merge(warmerge)
tab warmerge
drop warmerge
save, replace

*/Del 4: Fill the Gaps*/
run "M:\Master\Replicating CHS\Del 4, fokus stat.do"
save, replace

**/KRITERIE 3-bdeadlow: M:\Master\Replicating CHS\Kriterie 3, bdeadlow.do */**
insheet using "M:\Master\Sources\MainConflictTable.csv", clear
save "M:\Master\Replicating CHS\Kriterie 3, bdeadlow.dta", replace
run "M:\Master\Replicating CHS\del 1 fokus stat.do"

*/I generate a warperiod variable; the war must accumulate to more than 1,000
battle-deaths during subsequent active years. A year is active as long as
there are more than 100 battle-deaths*/
```

```
*/BATTLE-DEATHS*/
*/I merge in Lacina and Gleditsch battle-deaths dataset*/
run "M:\Master\Missing\Battle-death with no missing GDP.do"
drop if bdeadlow<100

*/WARPERIOD*/
*/Based on the obs included I generate a warperiod variable*/
run "M:\Master\Replicating CHS\War-Period, kriterie 3.do"

*/TOTALT ANTALL BATTLE-DEATHS*/
*/I generate a bdeadlowsum telling how many dies during the period*/
sort warperiod
by warperiod: egen bdeadlowsum = sum(bdeadlow)

*/I drop conflict years accumulating to less than 1000 during subsequent
active conflict years*/
drop if bdeadlowsum<1000

*/CHS do not differ between different conflicts within the same country. Thus
it is not necessary to include two conflict years from the same countryd i
samme land på samme sted*/
replace bdeadlowsum=bdeadlowsum*-1
sort primkey bdeadlowsum
by primkey: gen dobbel=_n
drop if dobbel>1
drop dobbel
replace bdeadlowsum=bdeadlowsum*-1

*/after deleting several of the observations the warperiod variable I have
does not work anymore. Thus I have to generate a new one*/
drop add2 firstyear warmissing2 warmissing n warperiod
run "M:\Master\Replicating CHS\del 2, kriterie 1.do"
save, replace

*/Expanding*/
save "M:\Master\Replicating CHS\Kriterie 3, bdeadlow_del2.dta", replace
sort gwno
by gwno: gen n=_n
drop if n>1
drop n
codebook gwno

keep  gwno year
expandcl 43, cluster(gwno) gen(hva)
sort gwno
by gwno: gen n=_n
replace n=n-1
replace year=year+n
drop if year>2002
gen primkey=(gwno*10000)+year
drop n hva
sort primkey
save, replace
codebook gwno
```

```
merge primkey using "M:\Master\Replicating CHS\Kriterie 3, bdeadlow.dta", keep
(warperiod location firstwaryear lastwaryear peacends peacecensored warperiod)
_merge(warmerge)
tab warmerge
drop warmerge
save, replace

*/Fill the Gaps*/
run "M:\Master\Replicating CHS\Del 4, fokus stat.do"
save, replace

*/Criterion 3-bdeadbest and bdeadhigh are constructed the exact same way, but
instead of using the low battle-deaths estimate I use the best and high.
Criterion 4-low-best and high are constructed after the same model, but
conflict years with less that 500 battle-deaths are droped, instead of less
than 100*/

*/ Part 1: focus state: "M:\Master\Replicating CHS\del 1 fokus stat.do"*/
*/Preparing the dataset*/
*/I remove all obs that are not civil conflicts*/
keep if type>=3

*/I remove all obs before 1960*/
drop if year<1960

*/I remove all obs after 2002*/
drop if year>2002

*/I remove Hyderabad*/
drop if id==19
save, replace

*/I prepare the data for merging*/
gen idprimkey=(id*10000)+year
sort idprimkey
save, replace

rename gwnoa gwno
destring gwno, replace

gen primkey=(gwno*10000)+year
save, replace

drop sideb
sort id
save, replace

merge id using "M:\Master\Helga\keepiftype=3.dta", keep(sideb)_merge
(sidebmerge)
tab sidebmerge
drop if sidebmerge==2

*/This leads to a few doble obs which must be removed*/
sort idprimkey
by idprimkey: gen n=_n
tab n
drop if n>1
```

```
*/I generate a warperiod variable: "M:\Master\Replicating CHS\del 2, kriterie 1.do"*/
sort gwno year
gen nextyear2=year[_n-1]
replace nextyear2=1960 if nextyear2==.
gen nextyear=year-nextyear2
replace nextyear=100 if nextyear==1
replace nextyear=0 if nextyear<100
replace nextyear=1 if nextyear==100
label var nextyear "krigen er aktiv kontinuerlig"
save, replace

sort gwno year
gen samecountry2=gwno[_n-1]
replace samecountry=1 if samecountry2==.
gen samecountry=samecountry2-gwno
replace samecountry=10000 if samecountry==0
replace samecountry=0 if samecountry<10000
replace samecountry=1 if samecountry==10000
label var samecountry "krigen foregår i samme land som foregående"

gen war2=samecountry*nextyear

*/I generate a counting variable based on war2*/
sort gwno year
gen warperiod = 1
replace warperiod = _n if war2 != war2[_n-1]
replace warperiod = warperiod[_n-1] if war2 == war2[_n-1]
list war2 warperiod

*/The warperiod variable does not succeed in differentiating between all warperiods; I therefore have to add some numbers*/
replace war2=5 if war2==0

*/I identify the waryear in a period that lasts min two years*/
sort gwno year
gen warsum2=war2[_n+1]
replace warsum2=5 if warsum2==.
gen ws3=warsum2+war2
gen firstyear=ws3+war2
replace firstyear=50 if firstyear==11
replace firstyear=0 if firstyear<50
replace firstyear=1 if firstyear==50

*/I generate a variable that identifies singelwars that follow singelwars,-conflict periods that only last one year*/
gen warsumII=war2[_n-1]
replace warsumII=1 if warsumII==.
gen warsumIII=war2[_n+1]
replace warsumIII=1 if warsumIII==.
gen middle=warsumII+warsumIII+war2
replace middle=100 if middle==15
replace middle=0 if middle<100
replace middle=1 if middle==100

*/I generate a counting variable based on warperiod*/
```

```
sort warperiod
by warperiod: gen n2=_n
replace n2=n2-1 if middle==1
gen add2=0
replace add2=n2 if firstyear==1
replace add2=n2 if middle==1
generate Warperiod=warperiod+add2
*/Each of the warperiods have their unique number*/
drop  middle n2 nextyear2 nextyear samecountry2 samecountry warsum2 war2 ws3
warsumII warsumIII warperiod
rename Warperiod warperiod
save, replace

*/I generate a variable telling which year was the last one in the period*/
sort warperiod
by warperiod:  egen lastwaryear = max(year)
label var lastwaryear "siste året med krig i denne warperiod"

*/I generate a variable telling which year was the first in the period*/
sort warperiod
by warperiod:  egen firstwaryear = min(year)
label var firstwaryear "første året med krig i denne warperiod"

*/I generate a dummy telling whether the obs was the last one in the period*/
gen dumlastwaryear=lastwaryear-year
replace dumlastwaryear=500 if dumlastwaryear==0
replace dumlastwaryear=0 if dumlastwaryear<=50
replace dumlastwaryear=1 if dumlastwaryear==500

*/I drop all obs that are not the last on in the warperiod*/
drop if dumlastwaryear==0

*/I generate a variable which tells when peace ends*/
sort gwno year
gen samecountry2=gwno[_n+1]
gen samecountry=samecountry2-gwno
replace samecountry=500 if samecountry==0
replace samecountry=0 if samecountry<499
replace samecountry=1 if samecountry==500
label var samecountry "Dummy 1=krigen foregår i samme land som neste obs"
drop samecountry2

*/I generate a variable which tells whether peace ends this year*/
gen peacends=firstwaryear[_n+1]
replace peacends=peacends*samecountry
label var peacends "=0 betyr at freden varer til 2002"

*/Is the peace right censored?*/
gen peacecensored=1
replace peacecensored=0 if peacends>0
label var peacecensored "Dummy 1=freden er høyresensurert"

*/I remove the wars that lasts til 2002. They do not generate any post-
conflict episode in the dataset. If they involve that a peace period ends I
have the necessary information*/
drop if year==2002
*/To not deal with too high values I change the warperiod number*/
```

```
gen wp=0
sort wp
by wp: gen nn=_n
drop wp
drop warperiod
rename nn warperiod
sort primkey
save, replace

*/Filling the gaps: "M:\Master\Replicating CHS\Del 4, fokus stat.do"*/
*/Del 4; Fill the gaps*/
*/Hasd merging led to any doble obs?*/
sort primkey
by primkey: gen n=_n
tab n

*/To keep things in order*/
rename warperiod pcperiod

*/after sorting on gwno and year the gap shall have the same value as the
first non-missing value above*/
sort gwno year
replace pcperiod = pcperiod[_n-1] if missing(pcperiod)
replace peacecensored= peacecensored[_n-1] if missing(peacecensored)
replace peacends = peacends[_n-1] if missing(peacends)
replace firstwaryear = firstwaryear[_n-1] if missing(firstwaryear)
replace lastwaryear = lastwaryear[_n-1] if missing(lastwaryear)
replace location = location[_n-1] if missing(location)
save, replace

*/War number 2-3-4 are included in the dataset, I identify and drop these*/
gen exclude=peacends
gen D=year-exclude
replace exclude=0 if D<0
drop if exclude>0
drop exclude D
save, replace

*/I generate a duration variable telling how long peace has lasted. Just like
CHS (though they do it in days) the peace is counted as having lated 1 year
when peace starts*/
sort pcperiod
by pcperiod: gen pduration=_n

*/Does peace end this year?*/
gen peacefailed=year-peacends
replace peacefailed=-500 if peacefailed==-1
replace peacefailed=0 if peacefailed>-500
replace peacefailed=1 if peacefailed==-500
save, replace

*/I identify the year peace ends*/
gen lastpyeardum=peacends-year
replace lastpyeardum=9999 if lastpyeardum==1
replace lastpyeardum=0 if lastpyeardum<9999
replace lastpyeardum=1 if lastpyeardum==9999
drop n
```

```
save, replace

*/The obs missing GDP data are removed*/
sort primkey
merge primkey using "M:\Master\GDP\GDP Capita WorldBank.dta", keep( logGDPCap2
gdpgrowth1)
drop if _merge==2
drop _merge

*/All peace years of Iraq are excluded, I believe it is due to the fact that
GDP data are missing the year peace ends, and not only in the beginning*/
drop if gwno==645
drop if logGDPCap2==.
drop if gdpgrowth1==.

*/Part 2 criterion 2: Peace must last 2 years at least in order to start*/
*/"M:\Master\Replicating CHS\del 2, kriterie 2.do"*/

*/As CHS does not differ between different conflicts in the state doble obs
are unnecessary*/
destring gwno, replace
drop primkey
gen primkey=(gwno*10000)+year
sort primkey
by primkey: gen dobbel=_n
drop if dobbel>1
drop dobbel

*/I generate a warperiod variable based on criterion 2*/
sort gwno year
gen nextyear2=year[_n-1]
replace nextyear2=1950 if nextyear2==.
gen nextyear=year-nextyear2
replace nextyear=100 if nextyear==1
replace nextyear=100 if nextyear==2
replace nextyear=0 if nextyear<100
replace nextyear=1 if nextyear==100

sort gwno year
gen samecountry2=gwno[_n-1]
replace samecountry2=1 if samecountry2==.
gen samecountry=samecountry2-gwno
replace samecountry=10000 if samecountry==0
replace samecountry=0 if samecountry<10000
replace samecountry=1 if samecountry==10000

gen war2=samecountry*nextyear

*/I generate a counting variable based on war2*/
sort gwno year
gen warperiod2 = 1
replace warperiod2 = _n if war2 != war2[_n-1]
replace warperiod2 = warperiod2[_n-1] if war2 == war2[_n-1]
list war2 warperiod2

*/I must add some inf. for this one to be correct*/
replace war2=5 if war2==0
```

```
*/I identify the conflict year that is the first on in a period that lasts at
least 2 years*/
sort gwno year
gen warsum2=war2[_n+1]
replace warsum2=1 if warsum2==.
gen ws3=warsum2+war2
gen firstyear=ws3+war2
replace firstyear=50 if firstyear==11
replace firstyear=0 if firstyear<50
replace firstyear=1 if firstyear==50

*/I generate a variable identifying singelyears that follow singelyears*/
sort gwno year
gen warsumII=war2[_n-1]
replace warsumII=1 if warsumII==.
gen warsumIII=war2[_n+1]
replace warsumIII=1 if warsumIII==.
gen middle=warsumII+warsumIII+war2
replace middle=100 if middle==15
replace middle=0 if middle<100
replace middle=1 if middle==100

*/I generate a counting variable based on warperiod2*/
sort warperiod2
by warperiod2: gen n2=_n
replace n2=n2-1 if middle==1
gen add2=0
replace add2=n2 if firstyear==1
replace add2=n2 if middle==1
generate warperiod=warperiod2+add2
*/Each of the warperiod have their uniqe number*/
drop  middle n2 nextyear2 nextyear samecountry2 samecountry warsum2 war2 ws3
warsumII warsumIII warperiod2
save, replace

*/I generate a variable telling which year is the last in the warperiod*/
sort warperiod
by warperiod:  egen lastwaryear = max(year)
label var lastwaryear "siste året med krig i denne warperiod2"

*/I generate a variable telling which year is the first in the warperiod*/
sort warperiod
by warperiod:  egen firstwaryear = min(year)
label var firstwaryear "første året med krig i denne warperiod-en"

*/Is the obs the last in the warperiod?*/
gen dumlastwaryear=lastwaryear-year
replace dumlastwaryear=500 if dumlastwaryear==0
replace dumlastwaryear=0 if dumlastwaryear<=50
replace dumlastwaryear=1 if dumlastwaryear==500

*/drop all ons that do not take place the last warperiod year*/
drop if dumlastwaryear==0

*/Dummy: When does peace end?*/
sort gwno year
```

```
gen samecountry2=gwno[_n+1]
gen samecountry=samecountry2-gwno
replace samecountry=500 if samecountry==0
replace samecountry=0 if samecountry<499
replace samecountry=1 if samecountry==500
label var samecountry "Dummy 1=krigen foregår i samme land som neste obs"
drop samecountry2

*/Which year is the last*/
gen peacends=firstwaryear[_n+1]
replace peacends=peacends*samecountry
label var peacends "=0 peace lasts til 2002"

*/Is the peacepåeriod rightcensored?*/
gen peacecensored=1
replace peacecensored=0 if peacends>0

*/ I remove all conflicts that lasts till 2002. I already have the necessary
inf.*/
drop if year==2002

*/I give the warperiod variable lower values*/
gen wp=0
sort wp
by wp: gen nn=_n
drop wp
drop warperiod
rename nn warperiod
sort primkey
save, replace

*/ Battle-deaths: "M:\Master\Missing\Battle-death with no missing GDP.do"*/
*/Battle-deaths*/

*/As Uppsala Prio do not provide exact battle-death data I have to use the
numbers provided by Lacina and Gleditsch (2005)*/
*/I merge the battle-death data into the dataset*/
sort idprimkey
save, replace

merge idprimkey using "M:\Master\Battledeaths\Battledeaths.dta", keep
(bdeadlow bdeadhig bdeadbes year gwno id) _merge(battlemerge)
tab battlemerge
drop if battlemerge==2
save, replace

*/Unfortunately there are 54 bdeadhig, 101 bdeadbbest and 54 bdeadlow missing
values*/

*/I use the intensity variable of Uppsala-Prio. If this one scores 2, there
have been more than 1,000 battle-deaths this year.*/
*/Thus if bdeadbest or bdeadhig is missing and this one scores 2 I replace the
missing value with 1000*/

gen warmissing=1 if bdeadbes==.
replace warmissing=0 if intensity==1
replace bdeadbes=1000 if warmissing==1
```

```
gen warmissing2=1 if bdeadhig==.
replace warmissing2=0 if intensity==1
replace bdeadhig=1000 if warmissing2==1

gen warmissing3=1 if bdeadlow==.
replace warmissing3=0 if intensity==1
replace bdeadlow=1000 if warmissing3==1

*/The problem is reduced to 34(bdeadhig and bdeadlow) and 81*/
*/For the 47 bdeadbest that are only missing in bdeadbes and not in bdeadhig
or bdeadlow I take the mean of bdeadlow and bdeadhig and give it to
bdeadbest*/
gen bdeadmean=(bdeadhig+bdeadlow)/2
replace bdeadbes = bdeadmean if bdeadbes==.

*/There are now 34 missing values in both datasets*/
*/If missing values (max 3) appear in the middle of a conflict period(the none
missing values must accumulate to more than 500) I replace missingness with
500. If not I replace it with 25*/
replace bdeadlow=500 if idprimkey==1181980
replace bdeadbes=500 if idprimkey==1181980
replace bdeadhig=500 if idprimkey==1181980

replace bdeadlow=500 if idprimkey==1131993
replace bdeadbes=500 if idprimkey==1131993
replace bdeadhig=500 if idprimkey==1131993

replace bdeadlow=500 if idprimkey==1131994
replace bdeadbes=500 if idprimkey==1131994
replace bdeadhig=500 if idprimkey==1131994

*/The 31 lasts are replaced by 25*/
replace bdeadlow=25 if bdeadlow==.
replace bdeadbes=25 if bdeadbes==.
replace bdeadhig=25 if bdeadhig==.
```

***/WAR-PERIOD: M:\Master\Replicating CHS\War-Period, kriterie 3.do */**

```
sort gwno id year
gen nextyear2=year[_n-1]
replace nextyear2=1950 if nextyear2==.
gen nextyear=year-nextyear2
replace nextyear=100 if nextyear==1
replace nextyear=0 if nextyear<100
replace nextyear=1 if nextyear==100
label var nextyear "krigen er aktiv kontinuerlig"
save, replace

sort gwno id year
gen sameid2=id[_n-1]
replace sameid2=1 if sameid2==.
gen sameid=sameid2-id
replace sameid=10000 if sameid==0
replace sameid=0 if sameid<10000
replace sameid=1 if sameid==10000
label var sameid "krigen foregår i samme land som foregående"
```

```
gen war2=sameid*nextyear

*/I generate a counting variable based on war2*/
sort gwno id year
gen warperiod = 1
replace warperiod = _n if war2 != war2[_n-1]
replace warperiod = warperiod[_n-1] if war2 == war2[_n-1]
list war2 warperiod

*/I must add some inf*/
replace war2=5 if war2==0

*/Which is the first waryear in a period that lasts a min of 2 year*/
sort gwno id year
gen warsum2=war2[_n+1]
replace warsum2=5 if warsum2==.
gen ws3=warsum2+war2
gen firstyear=ws3+war2
replace firstyear=50 if firstyear==11
replace firstyear=0 if firstyear<50
replace firstyear=1 if firstyear==50

*/I generate a variable that identifies single waryears that follows
singlewaryears*/
gen warsumII=war2[_n-1]
replace warsumII=1 if warsumII==.
gen warsumIII=war2[_n+1]
replace warsumIII=5 if warsumIII==.
gen middle=warsumII+warsumIII+war2
replace middle=100 if middle==15
replace middle=0 if middle<100
replace middle=1 if middle==100

*/I generate a coutning variable based on warperiod*/
sort warperiod
by warperiod: gen n2=_n
replace n2=n2-1 if middle==1
gen add2=0
replace add2=n2 if firstyear==1
replace add2=n2 if middle==1
generate Warperiod=warperiod+add2
*/Each warperiod has its own unique number*/
drop  middle n2 nextyear2 nextyear sameid2 sameid warsum2 war2 ws3 warsumII
warsumIII warperiod
rename Warperiod warperiod
save, replace
```

***/Comparing the results to CHS: "M:\Master\Replicating CHS\Analyse kriterie4-bdeadhig.do"*/**

```
*/I run the same analysis as CHS. To the extent that it is possible I make use
of the same variables*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadhig del2.dta", clear

*/I miss 6 of the independent variables. I already have GDP per capita*/
sort primkey
```

```
*/Polity*/
*/This time I do it identical to CHS, at least how they described it in their
article*/
merge primkey using "M:\Master\Uavhengige variabler\Polity.dta", keep(polity)
tab _merge
drop if _merge==2
drop _merge

*/I tarnsform it into a dummy variable equivalent to CHS*/
capture drop poldum
gen poldum=0 if polity>=-10 & polity<=-6
replace poldum=1 if polity>=-5
replace poldum=0 if polity<=-66

capture drop p_m
gen p_m=1 if polity<=-66
replace p_m=0 if p_m==.
save, replace

*/Diaspora*/
*/I collect the diaspora data from the US, divide it on the pop number and log
transform them*/
sort primkey
merge primkey using "M:\Master\Uavhengige variabler\Diaspora.dta", keep
(logdiaspop) _merge (diasporamerge)
tab diasporamerge
drop if diasporamerge==2
drop diasporamerge

*/I generate a logdiaspora missing variable*/
gen diaspora_m=1 if logdiaspop==.
replace diaspora_m=0 if diaspora_m==.

*/I give the logdiaspora missing value the value 0 if data are not missing*/
replace logdiaspop=0 if logdiaspop==.

*/Has merging led to any double observations?*/
save, replace
gen x=1
collapse (count) x, by(primkey)
drop if x==1
list
clear all
*/Det er ingen doble obs*/

use "M:\Master\Replicating CHS\Kriterie 4, bdeadhig del2.dta", clear

*/Has the peace episode lasted four years?*/
gen plussfour=1 if pduration>=5
replace plussfour=0 if pduration<5

*/UN operations*/
sort primkey
merge primkey using "M:\Master\Uavhengige variabler\UN.dta", keep ( UNexp
UNpeaceop) _merge(UNmerge)
tab UNmerge
```

```
drop if UNmerge==2

gen noUNpeaceop=1 if  UNpeaceop==.
replace noUNpeaceop=0 if UNpeaceop==1
*/UNexp er gjort om til en logit variabel*/
gen lUNexp = log(UNexp)

*/UNexp missing*/
gen UNexp_m=0 if noUNpeaceop==1
replace UNexp_m=UNexp if noUNpeaceop==0
replace UNexp_m=-5 if UNexp_m==.
replace UNexp_m=0 if UNexp_m>0
replace UNexp_m=1 if UNexp_m==-5
drop UNpeaceop UNmerge UNexp
replace lUNexp=0 if lUNexp==.
save, replace

*/ecofreedom*/
*/This is supposed to be logit transformed, but a short look at CHS data shows
that it has not been*/
sort primkey
merge primkey using "M:\Master\Uavhengige variabler\ecofreedom.dta", keep
(iecofreedom) _merge(ecofreemerge)
tab ecofreemerge
drop if ecofreemerge==2
drop ecofreemerge

*/ecofreedom missing*/
gen ecofree_m=1 if iecofreedom==.
replace ecofree_m=0 if ecofree_m==.
replace iecofreedom=0 if ecofree_m==1
save, replace

*/Ethnicity*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadhig del2.dta", clear

*/This variable only has one observation per country; I therefore use gwno to
merge it in*/
sort gwno
merge gwno using "M:\Master\Uavhengige variabler\Ethnic.dta", keep(ethnic)
_merge(ethnicmerge)
tab ethnicmerge
drop if ethnicmerge==2
drop ethnicmerge

*/ethnic_m*/
gen ethnic_m=1 if ethnic==.
replace ethnic_m=0 if ethnic_m==.
replace ethnic=0 if ethnic_m==1

*/Has merging datasets led to any doble observation*/
save, replace
gen x=1
collapse (count) x, by(primkey)
drop if x==1
list
clear all
```

```
*/Det er ingen doble obs*/


*/As I lack two of the independent variable groups I start by running the analysis on CHS but excluding the variables I am missing in every second column*/
use "M:\Master\Replicating CHS\CHS.dta", clear
stset pdur, id(warnumb) f(pcens)

*/In order to be able to compare results in the same model I give CHS the same names as mine*/
rename lpcgdp_2 logGDPCap2
rename dy_1 gdpgrowth1
rename Iefw iecofreedom
rename Iefw_m ecofree_m
rename lexpend lUNexp
rename no_un_data UNexp_m
rename absent noUNpeaceop
rename d2 plussfour
rename ldiaspc logdiaspop
rename diaspc_m diaspora_m
save, replace
adopath + "M:\Stata"

*/column 1*/
*/With all of the variables*/
eststo:streg  logGDPCap2 gdpgrowth1 poldum p_m auton auton_m ebox logdiaspop diaspora_m    ethnic  ethnic_m  lUNexp  UNexp_m  noUNpeaceop  plussfour,  nohr dist(exponential)
*/Without the variables I am missing*/
eststo:streg  logGDPCap2 gdpgrowth1 poldum p_m logdiaspop diaspora_m  ethnic ethnic_m lUNexp UNexp_m noUNpeaceop plussfour, nohr dist(exponential)

esttab
esttab  using  "M:\Master\Replicating  CHS\replisere  CHS  med  kriterie4-bdeadhig1.rtf", replace

*/column2*/
clear all
use "M:\Master\Replicating CHS\CHS.dta", clear
adopath + "M:\Stata"

*/with*/
eststo:streg  logGDPCap2 gdpgrowth1 poldum p_m auton auton_m E1st E1st_1 E2etc E2etc_1  logdiaspop  diaspora_m   ethnic  ethnic_m  lUNexp  UNexp_m  noUNpeaceop plussfour, nohr dist(exponential)
*/without*/
eststo:streg  logGDPCap2 gdpgrowth1 poldum p_m logdiaspop diaspora_m  ethnic ethnic_m lUNexp UNexp_m noUNpeaceop plussfour, nohr dist(exponential)

esttab
esttab using "M:\Master\Replicating CHS\replisere CHS med CHS2.rtf", replace

*/column3*/
clear all
use "M:\Master\Replicating CHS\CHS.dta", clear
adopath + "M:\Stata"
```

```
*/with*/
eststo: streg logGDPCap2 gdpgrowth1 poldum p_m auton auton_m ebox1st ebox2etc
logdiaspop diaspora_m  ethnic ethnic_m lUNexp UNexp_m noUNpeaceop plussfour,
nohr dist(exponential)

*/without*/
eststo: streg logGDPCap2 gdpgrowth1 poldum p_m logdiaspop diaspora_m  ethnic
ethnic_m lUNexp UNexp_m noUNpeaceop plussfour, nohr dist(exponential)

esttab
esttab using "M:\Master\Replicating CHS\replisere CHS med CHS4.rtf", replace

*/column 4*/
clear all
use "M:\Master\Replicating CHS\CHS.dta", clear
stset pdur, id(warnumb) f(pcens)
adopath + "M:\Stata"

*/with*/
eststo: streg logGDPCap2 gdpgrowth1 poldum p_m auton auton_m ebox iecofreedom
ecofree_m logdiaspop diaspora_m  ethnic ethnic_m lUNexp UNexp_m noUNpeaceop
plussfour, nohr dist(exponential)
*/without*/
eststo:  streg  logGDPCap2  gdpgrowth1  poldum  p_m   iecofreedom  ecofree_m
logdiaspop diaspora_m  ethnic ethnic_m lUNexp UNexp_m noUNpeaceop plussfour,
nohr dist(exponential)

esttab
esttab using "M:\Master\Replicating CHS\replisere CHS med CHS4.rtf", replace

*/I run the analysis (without the data I am missing) on my dataset as well.
This gives us only two different models*/

*/column 1*/
*/my dataset -CHS' model 1 without election and autonomy data*/
clear all
use "M:\Master\Replicating CHS\Kriterie 4, bdeadhig del2.dta", clear
adopath + "M:\Stata"
*/I start by stsetting the dataset*/
stset  pduration, id(pcperiod) f( peacefailed)
save, replace
eststo: streg  logGDPCap2 gdpgrowth1 poldum p_m logdiaspop  diaspora_m  ethnic
lUNexp UNexp_m noUNpeaceop plussfour, nohr dist (exponential)

*/column 2*/
*/CHS dataset -CHS' model 1 without election and autonomy data
use "M:\Master\Replicating CHS\CHS.dta", clear
stset pdur, id(warnumb) f(pcens)
save, replace
eststo:streg  logGDPCap2 gdpgrowth1 poldum p_m logdiaspop diaspora_m  ethnic
ethnic_m lUNexp UNexp_m noUNpeaceop plussfour, nohr dist(exponential)

*/column 3*/
*/my dataset -CHS' model 4 without election and autonomy data*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadhig del2.dta", clear
```

```
eststo: streg logGDPCap2 gdpgrowth1 poldum p_m iecofreedom ecofree_m
logdiaspop diaspora_m ethnic lUNexp UNexp_m noUNpeaceop plussfour, nohr dist
(exponential)

*/column 4*/
*/CHS' dataset -CHS' model 4 without election and autonomy data*/
use "M:\Master\Replicating CHS\CHS.dta", clear
eststo: streg logGDPCap2 gdpgrowth1 poldum p_m iecofreedom ecofree_m
logdiaspop diaspora_m ethnic ethnic_m lUNexp UNexp_m noUNpeaceop plussfour,
nohr dist(exponential)
esttab
esttab using "M:\Master\Replicating CHS\replisere CHS med kriterie4-
bdeadhigminedataog1.rtf", replace
```

***/ Drop the other independent variables: "M:\Master\Sammenlikne data\Drop independent variables.do"*/**

```
*/Chapter 4: why do results differ?*/
clear all
use "M:\Master\Replicating CHS\CHS.dta", clear

*/I introduce the poldum, economic freedom, gdp per capita and economic growth
variables that I have collected*/
sort primkey

*/ ECONOMIC FREEDOM*/
rename iecofreedom iecofreedomCHS
merge primkey using "M:\Master\Uavhengige variabler\ecofreedom.dta", keep
(iecofreedom) _merge (efreemerge)
tab efreemerge
drop if efreemerge==2
replace iecofreedom = 0 if efreemerge==1
corr iecofreedom iecofreedomCHS


*/ POLDUM*/
sort primkey
rename poldum poldumCHS
merge primkey using "M:\Master\Uavhengige variabler\Polity.dta", keep(polity)
tab _merge
drop if _merge==2
drop _merge

*/I have to tranfer it to a polity-dummy variable, likewise CHS'*/
gen poldum=0 if polity>=-10 & polity<=-6
replace poldum=1 if polity>=-5
replace poldum=0 if polity<=-66

corr poldum poldumCHS
clear all

use "M:\Master\Replicating CHS\CHS.dta", clear
*/I  have to give their GDP variables different names to seperate them*/
rename logGDPCap2 logGDPCap2CHS
rename gdpgrowth1 gdpgrowth1CHS

sort primkey
```

```
merge primkey using "M:\Master\Uavhengige variabler\GDPcapita World Bank.dta",
keep( logGDPCap2 gdpgrowth1) _merge(ecomerge)
tab ecomerge
drop if ecomerge==2

corr logGDPCap2  logGDPCap2CHS
corr gdpgrowth1 gdpgrowth1CHS
reg logGDPCap2  logGDPCap2CHS
reg gdpgrowth1 gdpgrowth1CHS
save, replace

*/column 1 CHS*/
use "M:\Master\Replicating CHS\CHS.dta", clear
stset pdur, id(warnumb) f(pcens)
eststo: streg logGDPCap2 gdpgrowth1 plussfour, nohr dist (exponential)

*/column 2*/
eststo: streg gdpgrowth1 plussfour, nohr dist (exponential)

*/column 3, criterion 4 bdeadhigh*/
use "M:\Master\Replicating CHS\Kriterie 4, bdeadhig del2.dta", clear
stset pduration, id(pcperiod) f(peacefailed)
eststo: streg logGDPCap2 gdpgrowth1 plussfour, nohr dist (exponential)

*/column 4*/
eststo: streg gdpgrowth1 plussfour, nohr dist (exponential)

esttab
esttab using "M:\Master\Sammenlikne data\GDPdata.rtf", replace
save, replace
clear all

*/running the analysis with their GDP data*/
*/column 1 CHS*/
use "M:\Master\Replicating CHS\CHS.dta", clear
stset pdur, id(warnumb) f(pcens)
eststo: streg logGDPCap2CHS gdpgrowth1CHS plussfour, nohr dist (exponential)

*/column 2*/
eststo: streg gdpgrowth1CHS plussfour, nohr dist (exponential)

*/setting the GDP data to missing for Serbia & Montenegro for 1995-2000*/
replace logGDPCap2CHS=. if primkey==3451995
replace logGDPCap2CHS=. if primkey==3451996
replace logGDPCap2CHS=. if primkey==3451997
replace logGDPCap2CHS=. if primkey==3451998
replace logGDPCap2CHS=. if primkey==3451999
replace logGDPCap2CHS=. if primkey==3452000

replace gdpgrowth1CHS=. if primkey==3451995
replace gdpgrowth1CHS=. if primkey==3451996
replace gdpgrowth1CHS=. if primkey==3451997
replace gdpgrowth1CHS=. if primkey==3451998
replace gdpgrowth1CHS=. if primkey==3451999
replace gdpgrowth1CHS=. if primkey==3452000
```

```
*/column 3*/
eststo: streg logGDPCap2CHS gdpgrowth1CHS plussfour, nohr dist (exponential)

*/column 4*/
eststo: streg gdpgrowth1CHS plussfour, nohr dist (exponential)
esttab
esttab using "M:\Master\Sammenlikne data\GDPdata2.rtf", replace
clear all
```

***/From days till years:"M:\Master\Sammenlikne data\From dates till years.do"*/**

```
*/From dates till years*/

clear all
use "M:\Master\Replicating CHS\CHS.dta", clear
stset pdur, id(warnumb) f(pcens)

*/column 1*/
eststo: streg logGDPCap2 gdpgrowth1 plussfour, nohr dist (exponential)

*/column 2*/
eststo: streg gdpgrowth1 plussfour, nohr dist (exponential)

sort warnumb year
by warnumb: gen peaceduration=_n
stset peaceduration, id(warnumb) f(pcens)

*/column 3*/
eststo: streg logGDPCap2 gdpgrowth1 plussfour, nohr dist (exponential)

*/column 4*/
eststo: streg gdpgrowth1 plussfour, nohr dist (exponential)
esttab
esttab using "M:\Master\Sammenlikne data\GDPdata.rtf", replace
save, replace
clear all
```

***/Removing discrepancies between CHS and COW:"M:\Master\Replicating CHS\removing mistakes.do"**

```
clear all
use "M:\Master\Replicating CHS\CHS.dta", clear
stset pdur, id(warnumb) f(pcens)
save, replace
adopath + "M:\Stata"

*/column 1*/
eststo: streg logGDPCap2 gdpgrowth1 plussfour, nohr dist(exponential)

*/column 2*/
eststo: streg gdpgrowth1 plussfour, nohr dist(exponential)

use "M:\Master\Replicating CHS\CHS rettet opp i feil3.dta", clear
save "M:\Master\Replicating CHS\CHS rettet opp i feil4.dta", replace

gen primkey=(gwno*10000)+year
```

```
sort primkey

rename logGDPCap2 logGDPCap2CHS
rename gdpgrowth1 gdpgrowth1CHS

merge primkey using "M:\Master\Uavhengige variabler\GDPcapita World Bank.dta",
keep(gdpgrowth1 logGDPCap2) _merge(gdpmerge)
tab gdpmerge
drop if gdpmerge==2

capture drop plussfour
gen plussfour=1 if pdur>= 1825
replace plussfour=0 if plussfour==.

stset pdur, id(warnumb) f(pcens)

*/column 3*/
eststo: streg logGDPCap2 gdpgrowth1 plussfour, nohr dist(exponential)

*/column 4*/
eststo: streg gdpgrowth1 plussfour, nohr dist(exponential)

*/from dates til year*/
sort warnumb year
by warnumb: gen pduration=_n
stset pduration, id(warnumb) f(pcens)

*/column 5*/
eststo: streg logGDPCap2 gdpgrowth1 plussfour, nohr dist(exponential)

*/column 6*/
eststo: streg gdpgrowth1 plussfour, nohr dist(exponential)
esttab
esttab using "M:\Master\Sammenlikne data\removing smallerrors.rtf", replace
```

***/Does the effect differ when only including the conflicts that appear in both datasets?: run "M:\Master\Cummulative\COW\post-conflict felles COW500.do"*/**

```
*/Comparing the post-conflict periods that are generated by conflict that
appear in both datasets. Start and end dates are the same as in ACD*/
clear all
use "M:\Master\Cummulative\COW\felles COW ingen doble.dta", clear
save "M:\Master\Cummulative\post-conflict:felles COW", replace

rename firstwaryear warstarts
rename lastwaryear peacestarts

*/I identify when the peace ends*/
sort gwno warstarts
gen peacends=warstarts[_n+1]
replace peacends=2002 if peacends==.

gen samegwno=gwno[_n+1]
replace samegwno=1000 if samegwno==.
replace samegwno=samegwno-gwno
replace samegwno=50000 if samegwno==0
replace samegwno= 0 if samegwno<50000
```

```
replace samegwno=1 if samegwno==50000

replace peacends=peacends*samegwno
rename samegwno pcpcensored
replace pcpcensored=5 if pcpcensored==0
replace pcpcensored=0 if pcpcensored==1
replace pcpcensored=1 if pcpcensored==5

replace peacends=2002 if peacends==0
replace peacends=2002 if peacends==.

gen a=1
sort a gwno year
by a: gen warperiod=_n
drop a
gen primkey=(gwno*10000)+peacestarts
sort primkey
drop if peacestarts>=2002
save, replace
save "M:\Master\Cummulative\post-conflict2fellesiCOW.dta", replace

sort gwno warstarts
by gwno: gen n=_n
tab n
keep if n==1
keep gwno peacestarts location
expandcl 48, cluster(gwno) gen(hva)
rename peacestarts year
sort gwno
by gwno: gen n=_n
replace year=year+n-1
drop if year>2002

gen primkey=(gwno*10000)+year
sort primkey
merge primkey using "M:\Master\Cummulative\post-conflict:felles COW", keep(id
warperiod warstarts peacestarts peacends pcpcensored)
tab _merge

*/I must fill in the empty spaces*/
sort gwno year
replace warperiod = warperiod[_n-1] if missing(warperiod)
replace id = id[_n-1] if missing(id)
replace warstarts = warstarts[_n-1] if missing(warstarts)
replace peacestarts = peacestarts[_n-1] if missing(peacestarts)
replace peacends = peacends[_n-1] if missing(peacends)
replace pcpcensored = pcpcensored[_n-1] if missing(pcpcensored)

*/I remove the waryears*/
gen D=year-peacends
replace D=-1 if D==.
replace D=-1 if pcpcensored==1
drop if D>-1
drop D
save, replace

*/I generate a duration variable*/
```

```
rename warperiod pcperiod
sort pcperiod year
by pcperiod: gen pduration=_n

*/I generate a dummy which tells whether peace ends this year*/
gen peacefailed=year-peacends
replace peacefailed=-500 if peacefailed==-1
replace peacefailed=0 if peacefailed>-500
replace peacefailed=1 if peacefailed==-500
replace peacefailed=0 if pcpcensored==1
save, replace

*/ I merge in GDP data*/
*/Fredsperiodene som ikke har fullstednig BNP-data må fjernes*/
sort primkey
merge primkey using "M:\Master\GDP\GDP Capita WorldBank.dta", keep( logGDPCap2
gdpgrowth1)_merge(ecomerge)
drop if ecomerge==2
drop ecomerge
drop if logGDPCap2==.
drop if gdpgrowth1==.
drop if gwno==645
gen dataset=1

*/I make a fourpluss variable, a dummy telling if the war has lasted more than
four years*/
gen plussfour=1 if pduration>=5
replace plussfour=0 if pduration<5

*/"stsetting" the dataset*/
drop if gwno==600
stset pduration, id(pcperiod) f(peacefailed)
save, replace
adopath + "M:\Stata"

*/column 1*/
eststo: streg gdpgrowth1 plussfour, nohr dist (exponential)

*/column 2*/
eststo: streg gdpgrowth1  logGDPCap2 plussfour, nohr dist (exponential)

*/The same conflicts, but with ACD's start and end dates:
"M:\Master\Cummulative\ACD\post-conflict ACD.do"*/
*/Comparing the post-conflict periods that are generated by conflict that
appear in both datasets. Start and end dates are the same as in COW*/A
use "M:\Master\Cummulative\ACD\postconflictfellesACD.dta", clear
save "M:\Master\Cummulative\post-conflict:ACD felles", replace

rename firstwaryear warstarts
rename lastwaryear peacestarts

*/I identify when the peace ends*/
sort gwno warstarts
gen peacends=warstarts[_n+1]

gen samegwno=gwno[_n+1]
replace samegwno=samegwno-gwno
```

```
replace samegwno=50000 if samegwno==0
replace samegwno= 0 if samegwno<50000
replace samegwno=1 if samegwno==50000

replace peacends=peacends*samegwno
rename samegwno pcpcensored
replace pcpcensored=5 if pcpcensored==0
replace pcpcensored=0 if pcpcensored==1
replace pcpcensored=1 if pcpcensored==5

replace peacends=2002 if peacends==0
replace peacends=2002 if peacends==.

gen a=1
sort a gwno year
by a: gen warperiod=_n
drop a
capture drop primkey
gen primkey=(gwno*10000)+peacestarts
sort primkey
drop if peacestarts>=2002
save, replace
save "M:\Master\Cummulative\post-conflict:2ACD felles", replace

sort gwno warstarts
by gwno: gen n=_n
tab n
keep if n==1
keep gwno peacestarts location
expandcl 48, cluster(gwno) gen(hva)
rename peacestarts year
sort gwno
by gwno: gen n=_n
replace year=year+n-1
drop if year>2002

gen primkey=(gwno*10000)+year
sort primkey
merge primkey using "M:\Master\Cummulative\post-conflict:ACD felles", keep(id
warperiod warstarts peacestarts peacends pcpcensored)
tab _merge

*/I must fill in the empty spaces*/
sort gwno year
replace warperiod = warperiod[_n-1] if missing(warperiod)
replace id = id[_n-1] if missing(id)
replace warstarts = warstarts[_n-1] if missing(warstarts)
replace peacestarts = peacestarts[_n-1] if missing(peacestarts)
replace peacends = peacends[_n-1] if missing(peacends)
replace pcpcensored = pcpcensored[_n-1] if missing(pcpcensored)

*/I remove the waryears*/
gen D=year-peacends
replace D=-1 if D==.
replace D=-1 if pcpcensored==1
drop if D>-1
drop D
```

```
save, replace

*/I generate a duration variable*/
rename warperiod pcperiod
sort pcperiod year
by pcperiod: gen pduration=_n

*/I generate a dummy which tells whether peace ends this year*/
gen peacefailed=year-peacends
replace peacefailed=-500 if peacefailed==-1
replace peacefailed=0 if peacefailed>-500
replace peacefailed=1 if peacefailed==-500
replace peacefailed=0 if pcpcensored==1
save, replace

*/ I merge in GDP data*/
*/Fredsperiodene som ikke har fullstednig BNP-data må fjernes*/
sort primkey
merge primkey using "M:\Master\GDP\GDP Capita WorldBank.dta", keep( logGDPCap2
gdpgrowth1)_merge(ecomerge)
drop if ecomerge==2
drop ecomerge
drop if logGDPCap2==.
drop if gdpgrowth1==.
drop if gwno==645

*/I make a fourpluss variable, a dummy telling if the war has lasted more than
four years*/
gen plussfour=1 if pduration>=5
replace plussfour=0 if pduration<5

*/"stsetting" the dataset*/
stset pduration, id(pcperiod) f(peacefailed)
adopath + "M:\Stata"

*/column 1*/
eststo: streg gdpgrowth1 plussfour, nohr dist (exponential)

*/column 2*/
eststo: streg gdpgrowth1  logGDPCap2 plussfour, nohr dist (exponential)

esttab
esttab using "M:\Master\Sammenlikne data\influential obs 2ACD-criterion3.rtf",
replace
save, replace

*/Including the excluded groups in COW: "M:\Master\Cummulative\Excluding
COWwars\including the excluded.do"*/
clear all
*/testing the effect of excluding groups*/
*/5=unsure, 3=excluded due to missing incompatibility/unorganized actors,
1=not sure*/
*/including group 5*/
use "M:\Master\Cummulative\COW\Alle i COW, men ingen doble.dta", clear
save "M:\Master\Cummulative\Excluding COWwars\gropu 5 included.dta", replace
drop if COWonly==1
drop if COWonly==3
```

```
rename firstwaryear warstarts
rename lastwaryear peacestarts

*/I identify when the peace ends*/
sort gwno warstarts
gen peacends=warstarts[_n+1]

gen samegwno=gwno[_n+1]
replace samegwno=samegwno-gwno
replace samegwno=50000 if samegwno==0
replace samegwno= 0 if samegwno<50000
replace samegwno=1 if samegwno==50000

replace peacends=peacends*samegwno
rename samegwno pcpcensored
replace pcpcensored=5 if pcpcensored==0
replace pcpcensored=0 if pcpcensored==1
replace pcpcensored=1 if pcpcensored==5

replace peacends=2002 if peacends==0
replace peacends=2002 if peacends==.

gen a=1
sort a gwno year
by a: gen warperiod=_n
drop a
capture drop primkey
gen primkey=(gwno*10000)+peacestarts
sort primkey
drop if peacestarts>=2002
save, replace
save "M:\Master\Cummulative\Excluding COWwars\group 5_del2.dta", replace

sort gwno warstarts
by gwno: gen n=_n
tab n
keep if n==1
keep gwno peacestarts location
expandcl 48, cluster(gwno) gen(hva)
rename peacestarts year
sort gwno
by gwno: gen n=_n
replace year=year+n-1
drop if year>2002


gen primkey=(gwno*10000)+year
sort primkey
merge   primkey   using   "M:\Master\Cummulative\Excluding   COWwars\gropu   5
included.dta", keep(id warperiod warstarts peacestarts peacends pcpcensored)
tab _merge

*/I must fill in the empty spaces*/
sort gwno year
replace warperiod = warperiod[_n-1] if missing(warperiod)
replace id = id[_n-1] if missing(id)
```

```
replace warstarts = warstarts[_n-1] if missing(warstarts)
replace peacestarts = peacestarts[_n-1] if missing(peacestarts)
replace peacends = peacends[_n-1] if missing(peacends)
replace pcpcensored = pcpcensored[_n-1] if missing(pcpcensored)

*/I remove the waryears*/
gen D=year-peacends
replace D=-1 if D==.
replace D=-1 if pcpcensored==1
drop if D>-1
drop D
save, replace

*/I generate a duration variable*/
rename warperiod pcperiod
sort pcperiod year
by pcperiod: gen pduration=_n

*/I generate a dummy which tells whether peace ends this year*/
gen peacefailed=year-peacends
replace peacefailed=-500 if peacefailed==-1
replace peacefailed=0 if peacefailed>-500
replace peacefailed=1 if peacefailed==-500
replace peacefailed=0 if pcpcensored==1
save, replace

*/ I merge in GDP data*/
*/Fredsperiodene som ikke har fullstednig BNP-data må fjernes*/
sort primkey
merge primkey using "M:\Master\GDP\GDP Capita WorldBank.dta", keep( logGDPCap2
gdpgrowth1)_merge(ecomerge)
drop if ecomerge==2
drop ecomerge
drop if logGDPCap2==.
drop if gdpgrowth1==.
drop if gwno==645

*/I make a fourpluss variable, a dummy telling if the war has lasted more than
four years*/
gen plussfour=1 if pduration>=5
replace plussfour=0 if pduration<5

*/"stsetting" the dataset*/
stset pduration, id(pcperiod) f(peacefailed)
adopath + "M:\Stata"


*/column 1*/
eststo: streg gdpgrowth1 plussfour, nohr dist (exponential)

*/column 2*/
eststo: streg gdpgrowth1  logGDPCap2 plussfour, nohr dist (exponential)

esttab
esttab using "M:\Master\Sammenlikne data\influential obs 2ACD-criterion3.rtf",
replace
save, replace
```

```
*/including group 3*/
use "M:\Master\Cummulative\COW\Alle i COW, men ingen doble.dta", clear
save "M:\Master\Cummulative\Excluding COWwars\gropu 3 included.dta", replace
drop if COWonly==1
drop if COWonly==5

rename firstwaryear warstarts
rename lastwaryear peacestarts

*/I identify when the peace ends*/
sort gwno warstarts
gen peacends=warstarts[_n+1]

gen samegwno=gwno[_n+1]
replace samegwno=samegwno-gwno
replace samegwno=50000 if samegwno==0
replace samegwno= 0 if samegwno<50000
replace samegwno=1 if samegwno==50000

replace peacends=peacends*samegwno
rename samegwno pcpcensored
replace pcpcensored=5 if pcpcensored==0
replace pcpcensored=0 if pcpcensored==1
replace pcpcensored=1 if pcpcensored==5

replace peacends=2002 if peacends==0
replace peacends=2002 if peacends==.

gen a=1
sort a gwno year
by a: gen warperiod=_n
drop a
capture drop primkey
gen primkey=(gwno*10000)+peacestarts
sort primkey
drop if peacestarts>=2002
save, replace
save "M:\Master\Cummulative\Excluding COWwars\group 3_del2.dta", replace

sort gwno warstarts
by gwno: gen n=_n
tab n
keep if n==1
keep gwno peacestarts location
expandcl 48, cluster(gwno) gen(hva)
rename peacestarts year
sort gwno
by gwno: gen n=_n
replace year=year+n-1
drop if year>2002


gen primkey=(gwno*10000)+year
sort primkey
merge primkey using "M:\Master\Cummulative\Excluding COWwars\gropu 3
included.dta", keep(id warperiod warstarts peacestarts peacends pcpcensored)
```

```
tab _merge

*/I must fill in the empty spaces*/
sort gwno year
replace warperiod = warperiod[_n-1] if missing(warperiod)
replace id = id[_n-1] if missing(id)
replace warstarts = warstarts[_n-1] if missing(warstarts)
replace peacestarts = peacestarts[_n-1] if missing(peacestarts)
replace peacends = peacends[_n-1] if missing(peacends)
replace pcpcensored = pcpcensored[_n-1] if missing(pcpcensored)

*/I remove the waryears*/
gen D=year-peacends
replace D=-1 if D==.
replace D=-1 if pcpcensored==1
drop if D>-1
drop D
save, replace

*/I generate a duration variable*/
rename warperiod pcperiod
sort pcperiod year
by pcperiod: gen pduration=_n

*/I generate a dummy which tells whether peace ends this year*/
gen peacefailed=year-peacends
replace peacefailed=-500 if peacefailed==-1
replace peacefailed=0 if peacefailed>-500
replace peacefailed=1 if peacefailed==-500
replace peacefailed=0 if pcpcensored==1
save, replace

*/ I merge in GDP data*/
*/Fredsperiodene som ikke har fullstednig BNP-data må fjernes*/
sort primkey
merge primkey using "M:\Master\GDP\GDP Capita WorldBank.dta", keep( logGDPCap2
gdpgrowth1)_merge(ecomerge)
drop if ecomerge==2
drop ecomerge
drop if logGDPCap2==.
drop if gdpgrowth1==.
drop if gwno==645

*/I make a fourpluss variable, a dummy telling if the war has lasted more than
four years*/
gen plussfour=1 if pduration>=5
replace plussfour=0 if pduration<5

*/"stsetting" the dataset*/
stset pduration, id(pcperiod) f(peacefailed)
adopath + "M:\Stata"


*/column 1*/
eststo: streg gdpgrowth1 plussfour, nohr dist (exponential)

*/column 2*/
```

```
eststo: streg gdpgrowth1  logGDPCap2 plussfour, nohr dist (exponential)

esttab
esttab using "M:\Master\Sammenlikne data\influential obs 2ACD-criterion3.rtf",
replace
save, replace

*/including group 1*/
use "M:\Master\Cummulative\COW\Alle i COW, men ingen doble.dta", clear
save "M:\Master\Cummulative\Excluding COWwars\gropu 1 included.dta", replace
drop if COWonly==5
drop if COWonly==3

rename firstwaryear warstarts
rename lastwaryear peacestarts

*/I identify when the peace ends*/
sort gwno warstarts
gen peacends=warstarts[_n+1]

gen samegwno=gwno[_n+1]
replace samegwno=samegwno-gwno
replace samegwno=50000 if samegwno==0
replace samegwno= 0 if samegwno<50000
replace samegwno=1 if samegwno==50000

replace peacends=peacends*samegwno
rename samegwno pcpcensored
replace pcpcensored=5 if pcpcensored==0
replace pcpcensored=0 if pcpcensored==1
replace pcpcensored=1 if pcpcensored==5

replace peacends=2002 if peacends==0
replace peacends=2002 if peacends==.

gen a=1
sort a gwno year
by a: gen warperiod=_n
drop a
capture drop primkey
gen primkey=(gwno*10000)+peacestarts
sort primkey
drop if peacestarts>=2002
save, replace
save "M:\Master\Cummulative\Excluding COWwars\group 1_del2.dta", replace

sort gwno warstarts
by gwno: gen n=_n
tab n
keep if n==1
keep gwno peacestarts location
expandcl 48, cluster(gwno) gen(hva)
rename peacestarts year
sort gwno
by gwno: gen n=_n
replace year=year+n-1
drop if year>2002
```

```
gen primkey=(gwno*10000)+year
sort primkey
merge primkey using "M:\Master\Cummulative\Excluding COWwars\gropu 1
included.dta", keep(id warperiod warstarts peacestarts peacends pcpcensored)
tab _merge

*/I must fill in the empty spaces*/
sort gwno year
replace warperiod = warperiod[_n-1] if missing(warperiod)
replace id = id[_n-1] if missing(id)
replace warstarts = warstarts[_n-1] if missing(warstarts)
replace peacestarts = peacestarts[_n-1] if missing(peacestarts)
replace peacends = peacends[_n-1] if missing(peacends)
replace pcpcensored = pcpcensored[_n-1] if missing(pcpcensored)

*/I remove the waryears*/
gen D=year-peacends
replace D=-1 if D==.
replace D=-1 if pcpcensored==1
drop if D>-1
drop D
save, replace

*/I generate a duration variable*/
rename warperiod pcperiod
sort pcperiod year
by pcperiod: gen pduration=_n

*/I generate a dummy which tells whether peace ends this year*/
gen peacefailed=year-peacends
replace peacefailed=-500 if peacefailed==-1
replace peacefailed=0 if peacefailed>-500
replace peacefailed=1 if peacefailed==-500
replace peacefailed=0 if pcpcensored==1
save, replace

*/ I merge in GDP data*/
*/Fredsperiodene som ikke har fullstednig BNP-data må fjernes*/
sort primkey
merge primkey using "M:\Master\GDP\GDP Capita WorldBank.dta", keep( logGDPCap2
gdpgrowth1)_merge(ecomerge)
drop if ecomerge==2
drop ecomerge
drop if logGDPCap2==.
drop if gdpgrowth1==.
drop if gwno==645

*/I make a fourpluss variable, a dummy telling if the war has lasted more than
four years*/
gen plussfour=1 if pduration>=5
replace plussfour=0 if pduration<5

*/"stsetting" the dataset*/
stset pduration, id(pcperiod) f(peacefailed)
adopath + "M:\Stata"
```

```
*/column 1*/
eststo: streg gdpgrowth1 plussfour, nohr dist (exponential)

*/column 2*/
eststo: streg gdpgrowth1  logGDPCap2 plussfour, nohr dist (exponential)
esttab
esttab using "M:\Master\Sammenlikne data\influential obs 2ACD-criterion3.rtf",
replace
save, replace

*/Checking the mean: "M:\Master\Cummulative\mean.do"*/
use "M:\Master\Cummulative\comparing the wars500.dta", clear
save "M:\Master\Cummulative\comparing the wars500_2.dta", replace
gen conflictduration=lastwaryear-firstwaryear
gen conflictfailed=0 if lastwaryear==2002
replace conflictfailed=1 if conflictfailed==.

stset conflictduration, fail(conflictfailed)
stci, by(dataset) rmean
stci, by(dataset) emean

gen fellesid= (felleskrigsnummer*10000)+dataset
sort fellesid
by fellesid: egen incompdur=sum(conflictduration)

replace firstwaryear=firstwaryear*-1
sort fellesid firstwaryear
by fellesid:gen n=_n
keep if n==1
replace firstwaryear=firstwaryear*-1

stset incompdur, fail(conflictfailed)
stci, by(dataset) rmean
stci, by(dataset) emean

sort felleskrigsnummer dataset
gen incompdur2=incompdur[_n+1]

gen distance=incompdur-incompdur2
replace distance=. if dataset==2

gen distance2=1 if distance>0
replace distance2=2 if distance<0
replace distance2=0 if distance==0
replace distance2=. if dataset==2
tab distance2

replace distance = distance*-1 if distance<0
gen x=1
sort x
by x: egen distancesum=sum (distance)
codebook distancesum

*/comparing warduration: "M:\Master\Sammenlikne data\Comparing
warduration.do"*/
*/comparing warduration*/
use "M:\Master\Sammenlikne data\comparing conflicts.dta", clear
```

```
*/I add 0.5 to the duration variable, in order to avoid that conflict that
start and end same year lasts 0 years*/
drop warduration
gen warduration= peacestarts- warstarts
replace warduration=warduration+0.5

stset  warduration, fail( warfailes)
stci, by(dataset) rmean

*/How many conflictyears per conflict issue?)

gen idataset=(id*1000)+dataset
sort idataset
by idataset:  egen wardursum = sum(warduration)
stset  wardursum, fail( warfailes)
stci, by(dataset) rmean

sort idataset
by idataset: gen n=_n
keep if n==1

sort id dataset
gen wardursum2=wardursum[_n+1]
replace wardursum2=. if dataset==2

gen difference=wardursum-wardursum2
tab difference
replace difference=1 if difference>0
replace difference=-1 if difference<0
replace difference=. if dataset==2
tab difference
```

***/Table 5-1 comparing the conflicts that appear in both datasets: "M:\Master\Tabell\warduration-enhet stat.do"*/**

```
clear all
use "M:\Master\Tabell\warduration3med inte.civilwars.dta"
save   "M:\Master\Sammenlikne   data\konflikter   i   begge   datasett,   state
focus2.dta", replace
rename firstwaryear war1starts
rename lastwaryear war1ends
drop if gwno==775
drop if gwno==520
drop if gwno==678
drop if gwno==680
drop if gwno==775
drop if gwno==700
drop if gwno==645

sort dataset gwno war1starts
gen war2starts=war1starts[_n+1]

*/do the observations belong to the same country*/
gen samewar=gwno[_n+1]
replace samewar=samewar-gwno
replace samewar=5000 if samewar==0
replace samewar=0 if samewar<5000
```

```
replace samewar=1 if samewar==5000
replace samewar=0 if samewar==.
replace war2starts=2002 if samewar==0

replace war2starts=2002 if war2starts==.
gen dur1=war1starts-1960
gen dur2=war1ends-war1starts
replace war2starts=. if samewar==0

*/ some wars start and end the same year. This gives the a duration equal to
0. In order to account these conflict I replace 0 with 0.5*/
replace dur2=0.5 if dur2==0

*/Which countries experience multiple civil wars, and how many?*/
gen gwnodataset=(dataset*10000)+gwno
sort gwnodataset war1starts
by gwnodataset: gen n=_n
tab n
by gwnodataset:  egen n2 = max(n)

gen war2ends=war1ends[_n+1]
replace war2ends=0 if war2ends==.
replace war2ends=0 if samewar==0

*/I generate a duration variable*/
gen dur3=war2starts-war1ends
replace dur3=2002-war1ends if samewar==0
gen dur4=war2ends-war2starts
replace dur4=0 if samewar==0

*/some values must be replaced by 0.5*/
gen a=0 if war2starts<10000
replace a=1 if a==.
replace a=a+dur4
replace dur4=0.5 if a==0

*/I can now remove the second war period*/
drop if n==2
drop samewar
sort gwnodataset war1starts
gen samewar=gwno[_n+1]
replace samewar=samewar-gwno
replace samewar=5000 if samewar==0
replace samewar=0 if samewar<5000
replace samewar=1 if samewar==5000
replace samewar=0 if samewar==.

sort gwnodataset war1starts
gen war3starts=war1starts[_n+1]
replace war3starts=0 if samewar==0

gen war3ends=war1ends[_n+1]
replace war3ends=0 if samewar==0

gen dur5=war3starts-war2ends
replace dur5=0 if samewar==0
replace dur5=2002-war2ends if n2==2
```

```
gen dur6=war3ends-war3starts
replace dur6=0 if samewar==0

*/some values must be replaced bu 0.5 here as well 0.5*/
drop a
gen a=0 if war3starts>0
replace a=1 if a==.
replace a=a+dur6
replace dur6=0.5 if a==0

drop if n==3
drop samewar a
sort gwnodataset war1starts
gen samewar=gwno[_n+1]
replace samewar=samewar-gwno
replace samewar=5000 if samewar==0
replace samewar=0 if samewar<5000
replace samewar=1 if samewar==5000
replace samewar=0 if samewar==.

sort gwnodataset war1starts
gen war4starts=war1starts[_n+1]
replace war4starts=0 if samewar==0

gen war4ends=war1ends[_n+1]
replace war4ends=0 if samewar==0

gen dur7=war4starts-war3ends
replace dur7=0 if samewar==0
replace dur7=2002-war3ends if n2==3

gen dur8=war4ends-war4starts
replace dur8=0 if samewar==0
gen dur9=2002-war4ends
replace dur9=0 if samewar==0
drop if n==4
tab n

gen a=0 if war4starts>0
replace a=1 if a==.
replace a=a+dur8
replace dur8=0.5 if a==0

gen x=1
sort x location dataset
by x: gen s=_n
replace s=s*-1

gen idataset=(id*1000)+dataset
gen location2 =location
graph hbar (asis) dur1 dur2 dur3 dur4 dur5 dur6 dur7 dur8 dur9, over
(idataset, sort(s) descending) stack
save, replace

*/Chapter 5's analysis:"M:\Master\My own analysis\med datovariabler.do"*/
*/This contains the analysis for chapter 5*/
```

```
clear all
insheet using "M:\Master\Sources\MainConflictTable.csv", clear
save "M:\Master\Replicating CHS\cummulative25", replace
*/Del 1, fokus stat: klargjøre datasettet*/
*/Fjerner alle observasjoner som ikke er borgerkriger¨. inkludert
kolonikriger*/
keep if type>=3

*/I remove all obs before 1960*/
drop if year<1960

*/Fjern Hyderbad*/
drop if id==19
save, replace

*/I prepare the data for merging*/
gen idprimkey=(id*10000)+year
sort idprimkey
save, replace

rename gwnoa gwno
destring gwno, replace

gen primkey=(gwno*10000)+year
save, replace

drop sideb
sort id
save, replace

merge id using "M:\Master\Helga\keepiftype=3.dta", keep(sideb)_merge
(sidebmerge)
tab sidebmerge
drop if sidebmerge==2

*/this generates some doble obs which must be taken away*/
sort idprimkey
by idprimkey: gen n=_n
tab n

drop if n>1

*/I generate a warperiod variable; the war must accumulate to more than 1,000
battle-deaths during subsequent active years. A year is active as long as
there are more than 100 battle-deaths*/

*/BATTLE-DEATHS*/
*/I merge in Lacina and Gleditsch battle-deaths dataset*/
run "M:\Master\Missing\Battle-death with no missing GDP.do"

*/WARPERIOD*/
*/Based on the obs now included I generate a warperiod variable*/
run "M:\Master\Replicating CHS\War-Period, kriterie 3.do"

*/TOTALT ANTALL BATTLE-DEATHS*/
*/I generate bdeabessum informing how many died during that period*/
sort warperiod
```

```
by warperiod: egen bdeadbessum = sum(bdeadbes)
codebook bdeadbessum

*/I drop all warperiods that accumulate to less than 1,000 during subsequent
active conflict years*/
drop if bdeadbessum<1000

*/CHS do not differ between different conflicts within the same country. Thus
it is not necessary to include two conflict years from the same countryd i
samme land på samme sted*/
replace bdeadbessum=bdeadbessum*-1
sort primkey bdeadbessum
by primkey: gen dobbel=_n
drop if dobbel>1
drop dobbel
replace bdeadbessum=bdeadbessum*-1

*/after deleting several of the observations the warperiod variable I have
does not work anymore. Thus I have to generate a new one*/
drop add2 firstyear warmissing2 warmissing n warperiod

*/I generate a warperiod variable*/
sort gwno year
gen nextyear2=year[_n-1]
replace nextyear2=1960 if nextyear2==.
gen nextyear=year-nextyear2
replace nextyear=100 if nextyear==1
replace nextyear=0 if nextyear<100
replace nextyear=1 if nextyear==100
label var nextyear "krigen er aktiv kontinuerlig"
save, replace

sort gwno year
gen samecountry2=gwno[_n-1]
replace samecountry=1 if samecountry2==.
gen samecountry=samecountry2-gwno
replace samecountry=10000 if samecountry==0
replace samecountry=0 if samecountry<10000
replace samecountry=1 if samecountry==10000
label var samecountry "krigen foregår i samme land som foregående"

gen war2=samecountry*nextyear

*/I generate a "xounting" variable based on war2*/
sort gwno year
gen warperiod = 1
replace warperiod = _n if war2 != war2[_n-1]
replace warperiod = warperiod[_n-1] if war2 == war2[_n-1]
list war2 warperiod

*/This does not acount the warperiods correctly, therefore I have to add some
information*/
replace war2=5 if war2==0

*/I identify the first waryear in a warperiod that lasts at least two years*/
sort gwno year
gen warsum2=war2[_n+1]
```

```
replace warsum2=5 if warsum2==.
gen ws3=warsum2+war2
gen firstyear=ws3+war2
replace firstyear=50 if firstyear==11
replace firstyear=0 if firstyear<50
replace firstyear=1 if firstyear==50
label var firstyear "Dummy=1 hvis obs er den første i en krigsperiode på min 2
år"

*/I create a variable that identifies "singel" wars(only last one year) that
follow "singel"wars*/
gen warsumII=war2[_n-1]
replace warsumII=1 if warsumII==.
gen warsumIII=war2[_n+1]
replace warsumIII=1 if warsumIII==.
gen middle=warsumII+warsumIII+war2
replace middle=100 if middle==15
replace middle=0 if middle<100
replace middle=1 if middle==100
label var middle "Dummy=1 dersom en singelkrig følger en singelkrig"

*/I  generate  a  counting  variable  "n"  based  on  the  incorrect  warperiod
variable*/
sort warperiod
by warperiod: gen n2=_n
replace n2=n2-1 if middle==1
gen add2=0
replace add2=n2 if firstyear==1
replace add2=n2 if middle==1
generate Warperiod=warperiod+add2
*/Now each of the warperiods has its own unique number*/

drop  middle n2 nextyear2 nextyear samecountry2 samecountry warsum2 war2 ws3
warsumII warsumIII warperiod
rename Warperiod warperiod
save, replace

*/I generate a variable telling which year was the last in the warperiod*/
sort warperiod
by warperiod:  egen lastwaryear = max(year)
label var lastwaryear "siste året med krig i denne warperiod"

*/I generate a variable informing which was the first year in the warperiod*/
sort warperiod
by warperiod:  egen firstwaryear = min(year)
label var firstwaryear "første året med krig i denne warperiod"

*/I generate a dummy telling whether this is the last obs in the warperiod*/
gen dumlastwaryear=lastwaryear-year
replace dumlastwaryear=500 if dumlastwaryear==0
replace dumlastwaryear=0 if dumlastwaryear<=50
replace dumlastwaryear=1 if dumlastwaryear==500

*/I  formate start and end dates*/
generate newstartdate2 = date( startdate2, "MDY")
format newstartdate2 %td
```

```
generate newependdate = date( ependdate, "MDY")
format newependdate %td

drop ependdate startdate2
rename newstartdate2 startdate2
rename newependdate ependdate

*/I generate a warperiod startvariabel*/
sort warperiod
by warperiod: egen warperiodstarts=min (startdate2)

*/I generate a warperiod ends variable*/
replace ependdate=0 if ependdate==.
sort warperiod

replace warperiodstarts=startdate2

sort warperiod year
by warperiod: egen warperiodends=max(ependdate)
replace ependdate=. if ependdate==0
replace warperiodends=17531 if warperiodends==0

*/I remove all conflict years that are not the lasts in the warperiod*/
drop if dumlastwaryear==0

*/I generate a variable telling when peace ends*/
sort gwno year
gen samecountry2=gwno[_n+1]
gen samecountry=samecountry2-gwno
replace samecountry=500 if samecountry==0
replace samecountry=0 if samecountry<499
replace samecountry=1 if samecountry==500
label var samecountry "Dummy 1=krigen foregår i samme land som neste obs"
drop samecountry2

gen peacends=warperiodstarts[_n+1]
replace peacends=peacends*samecountry
replace peacends=0 if peacends==.
label var peacends "=0 betyr at freden varer til 2007"

gen peacendyear=firstwaryear[_n+1]
replace peacendyear= peacendyear*samecountry
replace peacendyear=0 if peacendyear==.

*/I generate a variable telling whether the peace period is right censored*/
gen peacecensored=1
replace peacecensored=0 if peacends>0
label var peacecensored "Dummy 1=freden er høyresensurert"

*/I remove the conflicts that lasts till 2007. They do not generate any post-
conflict episodes. Some of them puts an end to a post-conflict episode. This
information is included in the dataset*/
drop if year==2007

*/To make things look a bit more elegant I want warperiod to have other, lower
values*/
gen wp=0
```

```
sort wp
by wp: gen nn=_n
drop wp
drop warperiod
rename nn warperiod
sort primkey
save, replace

*/Expanding the dataset*/
save "M:\Master\Replicating CHS\cummulative25_del2", replace
sort gwno
by gwno: gen n=_n
drop if n>1
drop n
codebook gwno

keep  gwno year
expandcl 48, cluster(gwno) gen(hva)
sort gwno
by gwno: gen n=_n
replace n=n-1
replace year=year+n
drop if year>2007
gen primkey=(gwno*10000)+year
drop n hva
sort primkey
save, replace
codebook gwno

merge primkey using "M:\Master\Replicating CHS\cummulative25", keep ( peacends
peacendyear  warperiodends  warperiodstarts  warperiod  location  firstwaryear
lastwaryear peacends peacecensored warperiod) _merge(warmerge)
tab warmerge
drop warmerge
save, replace

rename warperiodends peacestarts

*/Closing the Gaps*/
*/Sjekk om sammenslåingene har ført til doble observasjoner*/
sort primkey
by primkey: gen n=_n
tab n

*/(To make things correct)*/
rename warperiod pcperiod

*/After soring on gwno year, the gaps shall have the same value as the first
non-missing value above*/
sort gwno year
replace pcperiod = pcperiod[_n-1] if missing(pcperiod)
replace peacecensored= peacecensored[_n-1] if missing(peacecensored)
replace peacends = peacends[_n-1] if missing(peacends)
replace firstwaryear = firstwaryear[_n-1] if missing(firstwaryear)
replace lastwaryear = lastwaryear[_n-1] if missing(lastwaryear)
replace location = location[_n-1] if missing(location)
replace warperiodstarts = warperiodstarts[_n-1] if missing(warperiodstarts)
```

```
replace peacestarts = peacestarts[_n-1] if missing(peacestarts)
replace peacendyear = peacendyear[_n-1] if missing(peacendyear)

save, replace

*/War number 2-3-4 are included in the dataset. These must be removed*/
replace peacendyear=2007 if peacendyear==0
gen exclude=peacendyear
gen D=year-exclude
replace exclude=0 if D<0
replace exclude=0 if peacendyear==2007& peacends==0
drop if exclude>0
drop exclude D
save, replace

*/I need to create a dummy which tells wehther peace collapses this year*/
gen pcperiodends=peacendyear if peacends>0
replace pcperiodends=pcperiodends-year if peacends>0
replace pcperiodends=0 if pcperiodends>1
drop n

*/I generate a peaceduration variable*/
sort pcperiod
by pcperiod: gen pduration=_n
replace pduration=pduration*365
replace peacends=17531 if peacends==0
replace pduration=peacends-peacestarts if pcperiodends==1
replace pduration=peacends-peacestarts if year==2007
save, replace
format peacestarts %td
format peacends %td

*/I also want to generate a peaceduration variable in years*/
sort pcperiod
by pcperiod: gen pdur=_n

*/INDEPENDENT VARIABLES*/
*/GDP per Capita*/
sort primkey
merge primkey using "M:\Master\GDP\GDP Capita WorldBank.dta", keep( logGDPCap2
gdpgrowth1)
drop if _merge==2
drop _merge
save, replace

*/Polity-sip: Gates et al*/
sort primkey
merge              primkey              using              "M:\Master\Uavhengige
variabler\PolityGatesHegreStrand.dta", keep(sip2) _merge (sipmerge)
tab sipmerge
drop if sipmerge==2
drop sipmerge

gen demozip=1 if sip2>=0.67
replace demozip=0 if demozip==.

gen totzip=1 if sip<=0.33
```

```
replace totzip=0 if totzip==.

*/sipmissing*/
gen sip_m=1 if sip2==.
replace sip_m=0 if sip_m==.
replace sip2=0 if sip_m==1
replace demozip=0 if sip_m==1
replace totzip=0 if sip_m==1

*/Population (log)*/
sort primkey
merge primkey using "M:\Master\Uavhengige variabler\nabo+pop.dta", keep(nc2_1
lpop) _merge (popmerge)
tab popmerge
drop if popmerge==2

*/neighbor war*/
gen nc2_1_m=1 if nc2_1==.
replace nc2_1_m=0 if nc2_1_m==.
replace nc2_1=0 if nc2_1_m==1

gen lpop_m=1 if lpop==.
replace lpop_m=0 if lpop_m==.
replace lpop=0 if lpop_m==1

*/UN Expenditure*/
sort primkey
merge primkey using "M:\Master\Uavhengige variabler\UN.dta", keep ( UNexp
UNpeaceop) _merge(UNmerge)
tab UNmerge
drop if UNmerge==2
drop UNmerge

gen noUNpeaceop=1 if  UNpeaceop==.
replace noUNpeaceop=0 if UNpeaceop==1
*/UNexp er gjort om til en logit variabel*/
gen lUNexp = log(UNexp)

*/UNexp missing*/
gen UNexp_m=0 if noUNpeaceop==1
replace UNexp_m=UNexp if noUNpeaceop==0
replace UNexp_m=-5 if UNexp_m==.
replace UNexp_m=0 if UNexp_m>0
replace UNexp_m=1 if UNexp_m==-5
replace lUNexp=0 if lUNexp==.
save, replace

*/doble obs?*/
sort primkey
by primkey: gen n=_n
tab n
*/there are no doble obs*/
save, replace

*/I will delete the missing GDP data, but when adding Maddison's data I need
this information. Therefore I save one version where obs are not deleted*/
save "M:\Master\Replicating CHS\cummulative25_del2nomissing.dta", replace
```

```
use "M:\Master\Replicating CHS\cummulative25_del2.dta", clear

*/Comparing the means of the episodes soon to be excluded due to missing GDP
data and the rest of the observations*/
*/I generate a variable which tells whether the enitre period is missing*/
gen missing=1 if logGDPCap2==.
replace missing=1 if gdpgrowth==.
replace missing=0 if missing==.

sort pcperiod
by pcperiod: egen allmissing=min(missing)
label var allmissing "dum 1=all years in peacepisode=missing"
replace allmissing=1 if gwno==645
*/As democratic repluclic of Yemen cease to exist in 1994 I exclude this from
the analysis*/
drop if gwno==680

*/for the mean analysis I only want to keep the last obs*/
sort pcperiod
by pcperiod: egen maxyear=max(year)
replace maxyear=maxyear-year
replace maxyear=1000 if maxyear>0
replace maxyear=1 if maxyear==0
replace maxyear=0 if maxyear==1000
keep if maxyear==1

*/stset dataset*/
stset pduration, fail(pcperiodends)
stci, by(allmissing) rmean
stci, by(allmissing) emean
clear all

use "M:\Master\Replicating CHS\cummulative25_del2.dta", clear
*/repeated events before missing GDP excluded*/
sort pcperiod year
drop n
by pcperiod: gen n=_n
keep if n==1

sort gwno
by gwno: gen a=_n
tab a
clear all

*/I drop the obs with missing values. I also drop Iraq. Although there are two
obs at the middle of the peace period, there are no ones at the end when it
collapses*/
use "M:\Master\Replicating CHS\cummulative25_del2.dta", clear
drop if logGDPCap2==.
drop if gdpgrowth1==.
drop if gwno==645
save, replace

*/repeated events after missing GDP excluded*/
sort pcperiod year
drop n
by pcperiod: gen n=_n
```

```
keep if n==1

sort gwno
by gwno: gen a=_n
tab a
clear all
use "M:\Master\Replicating CHS\cummulative25_del2.dta", clear

*/does more harmed economies generate more growth when war has come to an
end?*/
*/I generate a primkey which is based on the firstwaryear*/
drop primkey
gen primkey=(gwno*10000)+firstwaryear
sort primkey
save, replace

merge primkey using "M:\Master\Uavhengige variabler\GDPcapita World Bank.dta",
keep(loggdpcap) _merge (amerge)
tab amerge
drop if amerge==2
drop amerge
rename loggdpcap gdpfirstwary

*/I generate a primkey for the year the warends*/
drop primkey
gen primkey=(gwno*10000)+lastwaryear
sort primkey
save, replace

merge primkey using "M:\Master\Uavhengige variabler\GDPcapita World Bank.dta",
keep(loggdpcap) _merge (amerge)
tab amerge
drop if amerge==2
drop amerge
rename loggdpcap gdplastwary

gen gdpchangewar=gdplastwary-gdpfirstwary
codebook gdpchangewar

*/gdpchangewar missing*/
gen gdpchangewar_m=1 if gdpchangewar==.
replace gdpchangewar_m=0 if gdpchangewar_m==.
tab gdpchangewar_m

*/I generate a variable which tells how much gdp capita changes during the two
first years of peace*/
replace primkey=primkey+2
sort primkey
merge primkey using "M:\Master\Uavhengige variabler\GDPcapita World Bank.dta",
keep(loggdpcap) _merge (amerge)
tab amerge
drop if amerge==2
drop amerge
rename loggdpcap gdppluss2

gen growth2=gdppluss2-gdplastwary
reg growth2 gdpchangewar
```

```
esttab using "M:\Master\uavhengige variabler\effect of economic change.rtf",
replace
drop primkey
gen primkey=(gwno*10000)+year
sort primkey
save, replace
replace gdpchangewar=0 if gdpchangewar_m==1

*/I generate a high income dummy-to test interaction*/
egen loggdpc_66pct = pctile( logGDPCap2) , p(67)
egen loggdpc_33pct = pctile( logGDPCap2) , p(33)
gen highincome=1 if  logGDPCap2>=7.3277807
replace highincome =0 if highincome==.

gen lowincome=1 if logGDPCap2<=6.1047931
replace lowincome=0 if lowincome==.

gen highincgrowth=highincome*gdpgrowth1
gen lowincgrowth=lowincome*gdpgrowth1

*/There might be some obs for which the last year of the peaceperiod has the
same duration as the year before.*/
*/If this is the case they do not add any information*/
gen x=(pcperiod*100000)+pduration
sort x year
drop n
by x: gen n=_n
tab n
*/there is only one doble obs*/
drop if n==2
save, replace

*/the extent of missing values*/
tab lpop_m
tab nc2_1_m
tab UNexp_m
tab gdpchangewar_m

stset pduration, failure( pcperiodends) id(pcperiod)
stcox lpop_m, nohr
stcox nc2_1_m, nohr
stcox UNexp_m, nohr
stcox gdpchangewar_m, nohr
save, replace

*/THE ANALYSIS*/
*/stset the dataset*/
stset pduration, failure( pcperiodends) id(pcperiod)
eststo: stcox  gdpgrowth1 logGDPCap2, nohr
eststo: stcox  gdpgrowth1 logGDPCap2 gdpchangewar gdpchangewar_m, nohr
stcox  gdpgrowth1 logGDPCap2, nohr
stcox   gdpgrowth1  logGDPCap2  gdpchangewar  gdpchangewar_m  noUNpeaceop  lUNexp
UNexp_m, nohr
eststo: stcox   gdpgrowth1 logGDPCap2 gdpchangewar gdpchangewar_m noUNpeaceop
lUNexp UNexp_m lpop lpop_m nc2_1 nc2_1_m, nohr
stcox  highincgrowth lowincgrowth highincome lowincome gdpgrowth1, nohr
esttab
```

```
stcox gdpgrowth1 logGDPCap2 gdpchangewar noUNpeaceop lUNexp lpop nc2_1,
schoenfeld(sch*) scaledsch(sca*)
stphtest, detail
save, replace
run "M:\Master\My own analysis\influential obs World Bank.do"


*/Maddison_Knutsen PPP adjusted GDP data*/
clear
run "M:\Master\Missing\Maddison-Knutsen.do"
use "M:\Master\Replicating CHS\cummulative25_del2nomissing.dta", clear

*/Maddison-Knutsen's data only goes to 2003, but with the lagged variables it
goes to 2004-I therefore delete observations occuring after this*/
drop if year>2004

*/Now I have to "fix" the last year of the peaceduration observation*/
replace peacends=16436 if peacends>16436
sort pcperiod
by pcperiod: egen maxyear=max(year)
replace maxyear=maxyear-year
replace pduration=peacends-peacestarts if maxyear==0

sort primkey
merge primkey using "M:\Master\Missing\Maddison-Knutsen.dta", keep(
Maddgrowth1 Madd2) _merge(Maddmerge)
tab Maddmerge
drop if Maddmerge==2
drop Maddmerge

*/costs of war*/
drop primkey
gen primkey=(gwno*10000)+firstwaryear
sort primkey
merge primkey using "M:\Master\Missing\Maddison-Knutsen.dta", keep(logMadd)
_merge(Maddmerge)
tab Maddmerge
drop if Maddmerge==2
drop Maddmerge
rename logMadd GDPwarstart

*/gdp lastwaryear*/
drop primkey
gen primkey=(gwno*10000)+lastwaryear
sort primkey
merge primkey using "M:\Master\Missing\Maddison-Knutsen.dta", keep(logMadd)
_merge(Maddmerge)
tab Maddmerge
drop if Maddmerge==2
rename logMadd GDPwarend
gen gdpchangewar=GDPwarend-GDPwarstart
save, replace
drop primkey
gen primkey=(gwno*10000)+year

gen gdpchangewar_m=1 if gdpchangewar==.
replace gdpchangewar_m =0 if gdpchangewar_m==.
```

```
replace gdpchangewar=0 if gdpchangewar_m==1

*/doble obs?*/
sort primkey
drop n
by primkey: gen n=_n
tab n
*/there are no doble obs*/

*/Interaction between income and growth?*/
egen Madd2_66pct = pctile( Madd2) , p(67)
*/8.0479565*/
egen Madd2_33pct = pctile( Madd2) , p(33)
*/7.1054683*/

gen highMadd=1 if Madd2>=8.0479565
replace highMadd=0 if highMadd==.
gen highMaddgrowth=highMadd*Maddgrowth1

gen lowMadd=1 if Madd2<=7.1054683
replace lowMadd=0 if lowMadd==.
gen lowMaddgrowth=lowMadd*Maddgrowth1

*/Tab Missing*/
tab sip_m
tab lpop_m
tab nc2_1_m
tab UNexp_m
tab gdpchangewar_m

stset pduration, failure( pcperiodends) id(pcperiod)
stcox sip_m, nohr
stcox lpop_m, nohr
stcox nc2_1_m, nohr
stcox UNexp_m, nohr
stcox gdpchangewar_m, nohr

*/there might be a few observations that must be excluded because
peaceduration is the same in both (they belong to the same post-conflict
period)
gen x=(pcperiod*100000)+pduration
sort x year
by x: gen a=_n
tab a
*/there are no "duplicates"*/
drop if a==2

*/stset the dataset*/
stset pduration, failure( pcperiodends) id(pcperiod)
eststo: stcox  Maddgrowth1 Madd2, nohr
stcox  Maddgrowth1 lowMadd highMadd highMaddgrowth lowMaddgrowth, nohr
eststo: stcox  Maddgrowth1 Madd2 gdpchangewar gdpchangewar_m, nohr
stcox    Maddgrowth1  Madd2  gdpchangewar  gdpchangewar_m  noUNpeaceop  lUNexp
UNexp_m, nohr
eststo:  stcox    Maddgrowth1  Madd2  gdpchangewar  gdpchangewar_m  noUNpeaceop
lUNexp UNexp_m lpop lpop_m nc2_1 nc2_1_m, nohr
```

```
*PH-assumption: Schoenfeld*/
stcox   Maddgrowth1  Madd2  gdpchangewar  lUNexp  noUNpeaceop,  schoenfeld(sch*)
scaledsch(sca*)
stphtest, detail
save, replace
run "M:\Master\My own analysis\influential obs Maddison.do"

save "M:\Master\Cummulative\med Gates et al.dta", replace
drop if year>2000
tab sip_m
stcox sip_m, nohr
replace sip2=sip2*100
eststo: stcox  Maddgrowth1 Madd2 gdpchangewar gdpchangewar_m sip2 sip_m, nohr
eststo:  stcox    Maddgrowth1  Madd2  gdpchangewar  gdpchangewar_m  noUNpeaceop
lUNexp UNexp_m lpop lpop_m nc2_1 nc2_1_m sip2 sip_m, nohr
 stcox   Maddgrowth1  Madd2  gdpchangewar  gdpchangewar_m  demozip  totzip  sip_m,
nohr
 stcox  Maddgrowth1 Madd2 gdpchangewar gdpchangewar_m, nohr

esttab
esttab using "M:\Master\My own analysis\cumm 1000_25.rtf", replace
save, replace

*/Interaction: polity*growth?*/
gen demgrowth=demozip*Maddgrowth1
gen totgrowth=totzip*Maddgrowth1
stcox Maddgrowth1 demozip totzip sip_m demgrowth totgrowth, nohr

*/The PH-assumtion*/
drop sch* sca*
stcox sip2, schoenfeld(sch*) scaledsch(sca*)
stphtest, detail
save, replace

run "M:\Master\Cummulative\Hazardfunksjon\hazard.do"
run "M:\Master\Repeated Events\Repeated Events2.do"

*/ Influential observations?:"M:\Master\My own analysis\influential obs World
Bank.do"*/
clear
use "M:\Master\Replicating CHS\cummulative25_del2.dta", clear
stset pduration, failure( pcperiodends) id(pcperiod)
stcox logGDPCap2 gdpgrowth1, efron esr(esr*)
set matsize 10000
mkmat esr1 esr2, matrix(esr)
mat V=e(V)
mat Inf=esr*V
svmat Inf, names(s)
scatter s1 _t, mlab(pcperiod) s(i)
scatter s2 _t, mlab(pcperiod) s(i)
*/obs 5-15-21-35-38-46-54 scores above 0.5. I control for these*/

gen dum5=1 if pcperiod==5
replace dum5=0 if dum5==.
 stcox  logGDPCap2 gdpgrowth1 dum5, nohr

gen dum15=1 if pcperiod==15
```

```
replace dum15=0 if dum15==.
 stcox  logGDPCap2 gdpgrowth1 dum15, nohr

gen dum21=1 if pcperiod==21
replace dum21=0 if dum21==.
 stcox  logGDPCap2 gdpgrowth1 dum21, nohr

gen dum35=1 if pcperiod==35
replace dum35=0 if dum35==.
 stcox  logGDPCap2 gdpgrowth1 dum35, nohr

gen dum38=1 if pcperiod==38
replace dum38=0 if dum38==.
 stcox  logGDPCap2 gdpgrowth1 dum38, nohr

gen dum46=1 if pcperiod==46
replace dum46=0 if dum46==.
 stcox  logGDPCap2 gdpgrowth1 dum46, nohr

gen dum54=1 if pcperiod==54
replace dum54=0 if dum54==.
 stcox  logGDPCap2 gdpgrowth1 dum54, nohr

*/Changing to Maddison's dataset: "M:\Master\Missing\Maddison-Knutsen.do"*/
*/Carl Henrik Knutsen's data*/
use "M:\Master\Missing\Madd-knutsen1.dta"
save "M:\Master\Missing\Maddison-Knutsen.dta", replace
*I need to make extra obs for year=2004 and 2005*/
sort gwno year
gen MaddGDPCap2= gdpppincludeinfer[_n-2]
replace MaddGDPCap2=. if year==1958
replace MaddGDPCap2=. if year==1959
expandcl 3 , cluster(gwno) gen(hva)
sort primkey
by primkey: gen n=_n
replace n=n-1
replace year=year+n if year==2003

*/the primkey variable does not include year 2004 and 3005*/
drop primkey
gen primkey=(gwno*10000)+year
sort primkey
drop n
by primkey: gen n=_n
tab n
keep if n==1

*/gdppincludeinfer is incorrect for year 2004 and 2005*/
replace gdpppincludeinfer=. if year>2003

*/Per Capita Income*/
gen Madd2=log(MaddGDPCap2)
label var Madd2 "log GDP cap 2 years lag*/
sort primkey
save, replace

*/Economic Growth*/
```

```
gen logMadd=log(gdpppincludeinfer)
label var logMadd "log GDP this year"
sort gwno year
gen Maddgrowth=logMadd[_n-1]
replace Maddgrowth=logMadd-Maddgrowth

gen Maddgrowth1=Maddgrowth[_n-1]
replace Maddgrowth1=. if year==1958

*/DOBLE OBS?*/
sort primkey
by primkey: gen a=_n
tab a
*/there are no doble obs*/
save, replace
save, replace
```

***/Influential obs with Maddison?: "M:\Master\My own analysis\influential obs Maddison.do"*/**

```
*/INFLUENTIAL OBSERVATIONS*/
clear
use "M:\Master\Replicating CHS\cummulative25_del2nomissing.dta", clear
stset pduration, failure( pcperiodends) id(pcperiod)
stcox Madd2 Maddgrowth1, efron esr(esr*)
set matsize 10000
mkmat esr1 esr2, matrix(esr)
mat V=e(V)
mat Inf=esr*V
svmat Inf, names(s)
scatter s1 _t, mlab(pcperiod) s(i)
scatter s2 _t, mlab(pcperiod) s(i)
*/obs 5-15-21-35-38-46-54 scores above 0.5. I control for these*/

gen dum5=1 if pcperiod==5
replace dum5=0 if dum5==.
 stcox  Madd2 Maddgrowth1 dum5, nohr

gen dum15=1 if pcperiod==15
replace dum15=0 if dum15==.
 stcox  Madd2 Maddgrowth1 dum15, nohr

gen dum36=1 if pcperiod==36
replace dum36=0 if dum36==.
stcox  Madd2 Maddgrowth1 dum36, nohr

gen dum47=1 if pcperiod==47
replace dum47=0 if dum47==.
stcox  Madd2 Maddgrowth1 dum47, nohr

gen dum54=1 if pcperiod==54
replace dum54=0 if dum54==.
stcox  Madd2 Maddgrowth1 dum54, nohr

gen dum56=1 if pcperiod==56
replace dum56=0 if dum56==.
stcox  Madd2 Maddgrowth1 dum56, nohr
```

```
gen dum71=1 if pcperiod==71
replace dum71=0 if dum71==.
stcox  Madd2 Maddgrowth1 dum71, nohr

*/Hazard-function: "M:\Master\Cummulative\Hazardfunksjon\hazard.do"*/
use "M:\Master\Replicating CHS\cummulative25_del2nomissing.dta", clear
stset pdur, failure( pcperiodends) id(pcperiod)

eststo: stcox Maddgrowth1 Madd2 gdpchangewar gdpchangewar_m noUNpeaceop lUNexp
UNexp_m lpop lpop_m nc2_1 nc2_1_m sip2 sip_m, basechazard (cummhaz1)
stcurve, cumhaz at1(Madd2=6.9256) at2(Madd2=8.3188)ylabel (0(0.05)0.25)

*/Accounting for repeated events:"M:\Master\Repeated Events\Repeated
Events2.do"*/
clear all
use "M:\Master\Replicating CHS\cummulative25_del2nomissing.dta", clear
save "M:\Master\Repeated Events\Repeated Eventes Madd.dta", replace
*/generating a sequency variable*/
sort pcperiod year
drop n
by pcperiod: gen n=_n

gen seq=(gwno*10000)+n
sort seq year
drop a
by seq: gen a=_n
replace a=1 if n>1

sort gwno pcperiod year
replace a=. if n>1
replace a = a[_n-1] if missing(a)
drop seq n
rename a seq
label var seq "number of pcperiod in that country"

*/generating an "enter" variable*/
sort pcperiod year
by pcperiod: gen n=_n
replace n = 0 if n==1
replace n =1 if n>0
rename n entrado

stset pduration, fail(pcperiodends) exit(time .) enter(entrado)
eststo:  stcox   Maddgrowth1  Madd2,  nohr  efron  robust  nolog  strata(seq)
cluster(gwno)
eststo: stcox  Maddgrowth1 , nohr efron robust nolog strata(seq) cluster(gwno)
eststo: stcox  Madd2, nohr efron robust nolog strata(seq) cluster(gwno)
eststo:  stcox   Maddgrowth1  Madd2  gdpchangewar  gdpchangewar_m  noUNpeaceop
lUNexp UNexp_m lpop lpop_m nc2_1 nc2_1_m, nohr efron robust nolog strata(seq)
cluster(gwno)

drop if year>2000
eststo:  stcox   Maddgrowth1  Madd2  gdpchangewar  gdpchangewar_m  noUNpeaceop
lUNexp UNexp_m lpop lpop_m nc2_1 nc2_1_m sip2 sip_m, nohr efron robust nolog
strata(seq) cluster(gwno)
```

```
stcox    Maddgrowth1  Madd2  gdpchangewar  gdpchangewar_m  noUNpeaceop  lUNexp
UNexp_m  lpop  lpop_m  nc2_1  nc2_1_m,  nohr  efron  robust  nolog  strata(seq)
cluster(gwno)
esttab
esttab using "M:\Master\repeated events\repeated events.rtf", replace
```

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